

**THE PRACTICE AND CHALLENGES OF EDUCATION MANAGEMENT  
INFORMATION SYSTEM INSELECTED WOREDA EDUCATION OFFICES OF  
JIMMA ZONE**

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**A THESIS SUBMITTED TO DEPARTMENT OF EDUCATIONAL PLANNING AND MANAGEMENT. IN  
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**DECLARATION**

I, the under signed, declared that this thesis is my original work and that all source of materials used for the thesis have been duly acknowledged.

Name \_\_\_\_\_

Sign. \_\_\_\_\_

Date \_\_\_\_\_

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

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## Abbreviations

<i>CPD</i>	=	Continuous professional Development
<i>EMIS</i>	=	Educational Management Information System
<i>ESDP</i>	=	Education Sector Development Program
<i>ICT</i>	=	Information Communication Technology
<i>Info Dev.</i>	=	Information Development
<i>IT</i>	=	Information Technology
<i>MOE</i>	=	Ministry Of Education
<i>OEB</i>	=	Oromiya Education Bureau
<i>SDP</i>	=	School Development Plan
<i>SIP</i>	=	School Improvement Program
<i>TVET</i>	=	Technical & Vocational Education Training
<i>WEO</i>	=	Woreda Education Office
<i>ZEO</i>	=	Zonal Education Office

## **ABSTRACT**

*The purpose of this study was to investigate the practices that have been carried out by Woreda Education Offices of Jimma Zone in organizing and implementing EMIS and examine problems that has been hindering such efforts. Descriptive survey research design was employed to conduct the research. Questionnaires, interviews and document analysis were used as data gathering tools. Census sampling methods was used to include sample respondents. Data were collected from five Woreda Education Offices, including Zonal Education Office. A total of 6 Education Office heads, 30 process owners, 60 experts and 5 school principals were involved as respondents to the study. The data were analyzed by using percentage, frequency, mean scores and t-test. The findings of the study revealed the woreda education offices has lack of skills in utilizing the existing resources based on EMIS generated information; besides, there is lack of trained experts in EMIS and lack of continuous training for statistical officers in woreda education offices of Jimma Zone. Moreover, the study revealed that the Woreda Education Offices haven't properly used EMIS for efficient resource utilization, monitoring and evaluation of office activities. In addition to this, lack of attention from top officials, lack of skill and lack of office and ICT facilities were the problems that challenged the organizations in implementing EMIS. Based on the findings of the study, recommendations were suggested. Firstly, in order to apply and benefit from EMIS, it is necessary to reorganize the system with skilled coordinators & up to date technology from top to bottom. Secondly, training and awareness creation workshop program should be designed & organized at all levels of the education management. Lastly, to overcome problems that hinder EMIS practice and implementation, zone and woreda education offices need to work hand-in-hand and get societal & NGO participation so as to secure fund. This is believed to be one of the ways that could enable them to possess a well organized EMIS at their level. The over all method and procedure of the research is based on discriptive survey and came up with findings that are discussed at the end of this thesis.*

## CHAPTER ONE

### 1. INTRODUCTION

Educational administrators of many offices face the challenge of accessing reliable data and information, relevant for desired education policy developments. Although in some institutions of the country, the establishment and use of the sustainable EMIS is relatively high on the education policy agenda, it seems that the process often encounters difficulties since it proves more demanding than envisaged. This chapter deals with background of the study, statement of the problem, objectives of the study, significance of the study, delimitation of the study, limitations of the study, definition of operational terms and organization of the study.

#### 1.1 Background of the Study

The necessity to exchange data, statistics, census & the like around the world was followed by the need to have timely, accurate and quality data for decision-making. Developed countries, like United States & Europeans emphasized the importance of gathering data from within and outside of an organization, and processing it to get due information so as to make practical decisions. The demand raised by various management bodies for the improvement of quality education led experts to seek for means of developing organizational management out of which education is one. Scholars came up with the results of their studies that scientific management of information system is one best means with which educational management is effective. As the goals of education shifted to quality and improving the performance of individual schools and education reform initiatives spread throughout countries, the limitations of existing statistical information services were widely acknowledged and efforts to strengthen them began.

In most countries, work began with efforts to improve the annual schools census, the heart of all statistical information systems at the time. So, the crafting of effective education policies began in some countries as early as in the late 1980s. *According to Cassidy (2005)*, efforts to extend all its systems throughout the 1990s and to the new millennium were seen. As a result of the development of widely-accepted international standards for information exchange, systems have been established to computerize routine administrative and management functions at various levels in developed countries.

The global consensus on the inclusion of EMIS in educational administration at all levels of many countries was entailed by the inevitability of information technology as primary component for processing data into information. In the mid-late 1990s, the situation began to change. Recognizing the limited success of earlier efforts, international and regional development agencies and NGOs began to pay more attention to the development of local knowledge and skills to use data to support decision making

After this, says *Tomy (2005)*, the timely integration of data from multiple sources and multiple levels would require the development of strategies to overcome the constraints of outdated organization structures, processes and practices. The recent rapid emergence of Information and Communications Technologies (ICT), most notably of the internet, around the world has given rise to the improvement of education data and information through technology. Internet-based EMIS is now almost the norm in planning for EMIS.

Africa, as one region in which this system is being developed, is striving to establish EMIS in its different parts. *Tegegn (2003)*, explains that many countries in Sub-Saharan Africa have already some form of data collection system in place. In the last decade, through a capacity building program, awareness has increased to strengthen education information system within the ministries. Many are working towards obtaining, at least, basic indicators of education system. Therefore, the demand for use of information for decision making has led to the need for strengthening of the education information system within their ministries. Many countries are asking for a guideline on how to go about establishing a strong center for organizing information for the management of education & its goals. Achieving the goals of quality, equality and equity requires new knowledge and skills at all levels and job categories from teachers and principals to regional and national-level educators. Professional development and training must be institutionalized in the cultures of education systems throughout its regions. There by, there have been some notable successes in computerizing administrative management functions in many of these countries.

One of the mentioned Sub-Saharan Countries is Ethiopia that is showing considerable effort to develop and organize sustainable structure of EMIS from federal up to school level.

Based on the influence of globalization,

*The FDRE Education Policy & MOE (2002)* planned to include an Education Management Information System (EMIS) & its implementation in all its administrative structures. Hence, according to the review of the then national educational statistics service (2004), the EMIS panel of the MOE has taken the main responsibility for data collection from all managerial sub-sectors and pre-primary to tertiary education.

Besides, The Ethiopian Ministry of Education noted in its design of the frame-work of *ESDP IV, Preparatory Phase 1 ( 2009)*, that one of their tasks is initiating technical preparation which was checking on the existing database (EMIS and new population census data). *The Ministry of Education (MOE)* of The Federal Democratic Republic of Ethiopia, together with *UNESCO,(2003)*, agreed to carry out a full diagnostic study on the production and use of education statistics in order to: (i) identify the areas that need strengthening; and (ii) develop a national action plan on and around the existing capacity of participants.

Now, in spite of some variances, the system enables federal, regional, woreda and school managements to exchange relatively timely & reliable information which is vital input for decision making. The central focus is, then, making efforts to develop more comprehensive, integrated computer-based education management information systems to support the monitoring and evaluation of education system performance. The MOE EMIS Department stated the system in its *ESDP IV (2009) as*, “When an information system provides information for the management of educational development and for effective decision-making, monitoring and evaluation of education activities, it enhances the achievement of Educational Objectives & Goals.” Oromiya Region, by now, is one of the regions that are connected to MOE with the use of information communication. According to *UNESCO document (2004)*, there are few regional panels that are more involved in the data collection, printing questionnaires, distribute to woredas and collect the replies. Jimma Zone Education Office is acting within this framework, though its level of quality & accuracy is not investigated. Based on this, the researcher intended to study how EMIS is being practiced, and the challenges that hinder its development in Jimma Zone Education Offices.

## 1.2. Statement of the Problem

EMIS is an important part of the Quality Evaluation Systems in education. The importance of quality education, is often stressing it as one of the principal objectives at all levels of education in the context of the learning society.

The quality evaluation and school self-evaluation, in particular, are seen as useful tools for tracking down students' achievement. The role of the information system in education is therefore crucial. It serves all levels of education, it is needed by all actors in the system, and it is essential for education policy planning, implementation and monitoring processes. Managing education through informed decision-making requires the availability of accurate and timely information which links together resource inputs to education and teaching and learning conditions, and processes and appropriate indicators of the knowledge.

The Jimma Zone Education Office, as the researcher came across, has mainly focused on duplicating & distributing questionnaire formats that are sent from regional education bureau. The questionnaires are of various types and seek for various data regarding the related topics. The collected data are mostly concerned with school census, enrollment, human resource, material resource and budget allocation & expenditure etc, the same is true for the woredas. The person in charge calculates the data gathered from all schools, classifies according to their types, organizes and sends to OEB. According to the explanation of the zonal TVET core process owner, all the data gathered and sent to OEB are collected only from woredas. There are no indications if any data from parents, NGOs, government organizations and other similar institutions are obtained.

As the data are handed over to the person in charge from woreda offices of education at different times, accuracy, timeliness and reliability of the data are under question. Concerning the management's awareness about EMIS, *MOE* informed *UNESCO (2004)* that it had provided short term training to regions zones and woredas so as to cascade it to school management. However, only similar data from different woredas are calculated statistically and stored on computers. Therefore, it is felt that there is some limitation in the proper implementation of EMIS and its basic concept. This needs to be investigated through research.

### **1.2.1. Research Questions**

The main focus of this research is to study how EMIS is being implemented in the mentioned offices. Therefore, this study is expected to answer the following basic questions.

1. How is the importance of EMIS perceived by the managing bodies & experts of zonal & woreda education offices?
2. How is EMIS organized and staffed at woreda & zonal level?
3. What is the quality of information generated by the EMIS experts of these offices?
4. What are the major challenges of EMIS in Jimma Zone Education Offices?

### **1.2.2. Objectives of the Study**

#### **a. General Objective of the Study**

The main purpose of this study is to find out how people perceive EMIS & how it is being practiced in Jimma Zone & Woredas Education Offices; the challenges that encounter its progress, and then propose solutions that will be elicited from the research.

#### **b. Specific Objectives**

The specific objectives of this research are:

- To find the extent to which management, statisticians and workers perceive the importance of EMIS in their activities.
- To assess how the leaders, planners & statisticians arrange data & staff them in their activities.
- To find the quality of information generated at the zone & woredas management level and how they use it to improve their activities.
- To investigate major challenges those encounter the implementation of EMIS.

### **1.3 Significance of the Study**

The main purpose of this research is to identify challenges that hinder proper implementation and practice of Education Management Information System in the zonal & woreda education offices by inspiring management for better understanding of its benefits.

This involves focusing on what the EMIS is & its uses as premise, how, why it is not used scientifically.

Therefore, the significance of this research relates to detecting problems encountered in understanding the use of an EMIS and facilitating access to reliable data/information for effective management and decision-making. As EMIS and its proper utilization is believed to be the back bone of educational leadership and teaching-learning activities, it is of fundamental importance for all education leaders of the zonal and woredas education offices as well as school staffs. Hence:

- The zonal education office can benefit from EMIS in such a way that the head, core process owners, EMIS focal persons & experts will be directly interconnected to all woreda education offices through local network. This enables them to :
  - receive up to date data from all woredas at a time,
  - Save time, money & labor that would be used to collect data from each Woreda by travelling from one to the other,
  - Collect data in time and have time for checking, inquiring, correcting data & reporting,
  - Help academic & TVET experts to follow educational planning & supervision of schools being in their offices,
  - Quickly & easily give feed-back to every sector that submitted information,
  - Implement & use EMIS for making efficient planning & effective decision making in all aspects,
  - Facilitate & provide professional trainings.
- .Similarly, the woreda education offices can obtain significant benefits from using EMIS. some can be:
  - Having scientifically organized and implemented EMIS department along with specialized experts,
  - Receiving & retrieving data by collecting it from all schools in time,
  - Making day to day interconnection with all schools,
  - Sending & taking back data/information to & from zonal education office
  - Controlling & correcting schools' daily activities,



- Planning properly & making effective decisions,
- Conducting efficient training and running all work efficiently.
- Schools can also make use of EMIS for several purposes:
  - School leaders can use EMIS for effective planning, proper use of resources, school improvement & development,
  - Professional training & development,
  - Using information generated from data gathered from parents & students,
  - Designing mechanism for effective use of internet that provides the school with important references,
  - Making effective decisions based on relevant information & communicating them to departments in time,
  - Sending & receiving data/information to and from woreda & other concerned education leaders.
- School teachers can use EMIS most significantly in their day to day activities. As the major aim of all educational leadership from top to bottom is providing quality education, this could be achieved through implementing student-centered teaching-learning technique. Teachers are expected to exploit all necessary resources to shape self reliant & problem solving citizens. To do so, they need to be competent and this can be achieved from referring global knowledge from global network. EMIS provides them with opportunity to browse into internet and get lesson documents. They can use it for self-learning and continuous professional development & supplementary teaching material to enrich their lesson presentations. Teachers can also use EMIS for recording, processing, passing & receiving information. They can help students to use internet for reference and self-learning source. Finally, students' progress, exam result, achievement & status can be best processed with the help of EMIS.
- Researchers, planners, project designers and the like can use EMIS to obtain reliable information from due sources to include them as pertinent input for processing their designs. It is also possible to employ this system to evaluate or measure the data they collected as well as information generated. Besides these, it could help them to establish interconnection with stakeholders for mutual exchange of data/information. Generally, all users of EMIS can be advantageous in such a way that they can confidently ensure the validity & reliability of all data/information they receive.

- This research can also provide insight into the implementation of similar systems in other similar offices around through the ongoing sharing of ideas among educational institutions.

Hence, the study could aware leaders & principals to strive for strengthening the system with the development of a comprehensive computer-based EMIS that requires the involvement and participation of all the education field communities. It can also initiate interested individuals or groups to make further study on this topic.

#### **1.4 Delimitation of the Study**

The study is confined to the zonal & five woreda education offices and five secondary schools of the region. Data that is gathered from these sources could provide the researcher information about how these & the rest woredas are processing EMIS as they all have similar structure & work system. So, these could suffice to investigate how data is gathered from woredas & schools, processed and used for decision-making. The researcher believes that studying how information is generated in these offices and how EMIS is perceived & handled could incite an overall status of EMIS in Jimma Zone.

On the other hand, the research is designed to use only 101 participants as sample of the study. This is for it is estimated that this amount is sufficient to represent the whole population as no unique work behavior is exhibited in any other woreda, according to the explanation of the TVET core process owner of the zonal education office.

#### **1.5 Limitations of the Study**

There are very few documents that could explain how MOE is planning & intending to lay sustainable structure of EMIS from the ministry up to the school level. Even if the ministry stated the decentralization of educational management, details about the arrangement & organization of the system are not specified in educational leadership manual. So, the study is inclined to assess universal theory of EMIS and other African countries experiences for reference. Since only limited hard copies on how to develop & implement the system at zonal & woreda level are published locally, it is difficult to get adequate & brief background of the region's effort to equip education offices with EMIS.

Thus, the study can state little about work specification of professional coordinators of EMIS at these levels.

On the other hand, it was time taking to get participants at a time for interview since they were called for meeting during the appointments. Few questionnaire papers were also late to reach & return from the respondents on time because of the fast movement of individuals from place to place. Thus, the researcher is limited to assess the mentioned target offices and five schools' current practice & challenges of EMIS.

## CHAPTER TWO

### 2. REVIEW OF LITERATURE

This chapter presents the review of related literature on the concept of importance of Education Management Information System, the role of data in EMIS, EMIS for Management, the Role of EMIS at Zonal and Woreda Level, the Role of EMIS in Education Provision, Dimensions of Integration in an EMIS and the Challenges in Developing EMIS in Education Management.

#### 2.1 What is Education Management Information System (EMIS)?

An Education Management Information System (EMIS) is a system for the collection, integration, processing, maintenance and dissemination of data and information to support decision making, policy-analysis and formulation, planning, monitoring and controlling at all levels of an education system, *Tom (2005)*. The technical operation of EMIS is to coordinate information resources such as the education statistics unit, the education information and documentation services, and departments holding various administrative records for education. It is also said to be a system of people, technology, models, methods, processes, procedures, rules and regulations that function together to provide education leaders with concrete knowledge of working system. It gives decision makers and managers a comprehensive, integrated set of relevant, reliable, unambiguous, and timely data and information to support them in completion of their responsibilities. The aim is to integrate the various sources of educational management information into one coordinated system that serves the entire education system.

A comprehensive EMIS will provide access to quantitative and qualitative data; to data on inputs, processes, and outputs; and to data on students, teachers, facilities, examination results, expenditures, etc. *UNESCO, Plan of Action in Tajikistan, (2003, p. 5)*. EMIS is perceived & explained differently by various scholars. *Tom (January 2005)*, in his document on EMIS in Latin America, denotes some definitions he came across that different people's understandings of what an EMIS is and the vision of what EMIS could be can be quite different from one country and one person to the other.

For some people, any effort to improve the quality of data and information is associated with EMIS. For another, an EMIS is simply an updated, computerized statistical information system. Others consider any administrative function-specific database system as an EMIS, e.g., personnel management systems, financial management systems, project monitoring systems, municipal education database systems, etc. For the rest, EMIS is all about computers and computerization.

The necessity to get accurate, timely and quality data caused the demand for some sort of systematic management of information. This was followed by the desire to have standardized meaning of the system from which the above stated different definitions are posited. All of them, in fact, are not far from its comprehensive meaning. In context, "It is an organized group of information and documentation services that collect, store, processes, analyze and disseminate information for educational planning and management." (*UNESCO document, 2003*); This definition of EMIS is really a statement of a vision of a system; a system that, if realized, would provide education leaders and decision makers with all the data and information needed to insure the development of highly effective and efficient education systems. According to UNESCO, there are some important dimensions to be noticed in its implementation; its demand & supply side, its multi-type sources & levels and multi-year nature of data that must be capable of pulling together, managing and providing to users in the system. In addition to these, EMIS is part of policy making & planning process. Therefore, as the potential users of data, managers must be systematically provided with accurate and timely information so that decision-making, planning, project development and other management functions can be carried out effectively.

## **2.2. Importance of Education Management Information System.**

EMIS being a system is used as a set of formalized and integrated operational processes, procedures, and cooperative agreements by which data and information about schools; educational resources and infrastructure; other learning activities, and evaluative outputs are regularly shared, integrated, analyzed, and disseminated for educational decision making at each level of the educational hierarchy. Educational Management Information System is mainly perceived & used as comprehensive and coordinated data collection, processing, storage and dissemination mechanism for the education sector.

The importance of a well-established EMIS is that problems associated with lack of knowledge on the status of education development at a given time and what really needs to be done will be solved systematically. It also helps to know the status of education development and manage it in an effective and efficient way at various levels.

EMIS could also provide other important information, such as outcomes of findings of education researches, results of school inspectorates, newsletters, regulations, school mapping and micro planning reports, public expenditure review, recorded documents of *TDP*, *ESDP*, *SDP*, *SIP*, *CPD* and the like. These documents are archived in the system to which anyone can have access.

The description of Mid-term plan of Tanzania, (29 November 2004), (*“EMIS Development Plan 2004-2007”*), explains that the development & implementation of EMIS in schools can increase enrolment and retention by improving the teaching-learning environment at all levels through; strengthening the management capacity, improving the Education Management Information Systems, controlling the spread of HIV/AIDS within the education system. Communication networking with schools, districts, regional as well as zonal inspectors with MOE is possible with the use of EMIS, reducing the use of paper communications. In addition to this, EMIS is able to provide data required by users for the calculation of all key education indicators. The data and information required for EMIS could be: baseline education statistics and demographics, such as students, by age, gender, grade, teachers, textbooks and type of schools, human resource information – teaching staff non-teaching staff, their qualification, experiences, status, service records, career development records etc.

Infrastructure and assets data – classroom, furniture, school area, other facilities, and performance measures data – results of national examinations and local examination, repetition rates, transition can be evaluated. Financial management information– cash flow of school finance, audit report, expenditure reports, implementation of school plans and school contributions, studies, researches, information materials, results of school inspection, documents, education policy, acts and regulations are all realized by EMIS.

In aggregate, EMIS is important to promote school performance with the strategies, which are capacity building and institutionalization, development of software system, hardware procurement & installation, and program management and monitoring activities at all levels.

### 2:3. The Role of Data in EMIS

Data is raw collection of statistical and verbal reports gathered from various sources so as to generate dependable information about the sources and their environments. It is usually obtained from proper documents or reports of the target sources. Data is the main input for EMIS. Data has pivotal role in educational leadership in such a way that its outcome enables leaders to make effective decisions & bring educational changes through ensuring quality. Since the utilization of EMIS is the issue of the day, it is mandatory not only to collect process & utilize, but also to develop its structure from grass root level up to federal EMIS center.

Hence, to be part of the ongoing world, education management needs to employ the current system of data collecting, processing, utilization, disseminating, storing and then develop a comprehensive EMIS systems, which allow an effective development of educational progress. The data accumulated through scientific process need to be shared and linked to central governmental offices through chains of EMIS. This is realized if proper education data information providers and users are available at all levels. Reliable data is, therefore, the skeleton of reliable information which is major input for planning. If necessary facility is fulfilled along with the development of EMIS, accurate data collection and processing can take place through the developed system of EMIS technology. This enhances efficiency in management & utilization of resources which contribute to the achievement of quality education.

The collecting, processing, coding, analyzing data, generating information and providing feedback system, if sustainable, strengthens the bond among data providers & users at all levels. In other words, if such system works continuously from school level up to MOE, the exchange of timely information can be customized. *Tegegn NESIS/ UNESCO, (Nov. 2003)* states the significance of the role of data in EMIS that there are various stages & roles of data processes in the implementation of EMIS. They are:

- 1- Data collections which are prepared at the center in a centralized system or regional offices in a decentralized system. This is based on the knowledge of what type of data the planners, decision-makers, experts and researchers need,
- 2- Data entry that is done using front end, user friendly data entry templates, which are prepared by computer programmers working in EMIS,

3- Data cleaning which refers to checking for errors routinely so that what is on the instrument of data collection is equivalent to what is entered in the computer. This has to be supplemented with well scheduled proof-reading method, in which two or three different groups do the proof reading,

4- Data compilation is obtaining a flat table from a relational database and aggregating it by level and geographic units. This step makes the data set ready for the analysts.

5-Data Analysis which is looking more closely to the data and in various ways in order to get information useful for planning and decision making.

6- Reporting- the type of report we need to compile may differ depending on the type of user we are obliged to serve. Some users may need the data that is the yearly abstract or quick book references of only numbers and some indicators. Other users, who are accountable to report to, may need a detailed analysis which shows both the achievements and shortcomings. Therefore, data collected & processed by a sub-unit can satisfy different users at upper levels. These can be; general users, decision makers, planners, researchers, information service providers, students and teachers. In general, the role of data in EMIS is taken as foundation for its operation.

## **2.4 EMIS for Management**

Management is an effort made to lead the exertion of human and material input in order to achieve the set objectives through coordinating knowledge and skills of people involved.

Information Technology is the equipment used for input, processing and output activities, in system; detailed preprogrammed instructions to control and coordinate components, storing data in magnetic disk, optical disk, tape etc., and transfers data from one location to other. The equipment can be connected into network for sharing the resources. An EMIS is utilizing information for proper planning & decision making in the management functions. In another way, EMIS can be perceived as an early-warning and early-learning system for education leaders.

That is, as broadly stated, an EMIS should facilitate the timely identification of underperforming units, such as schools, communities, districts, and societies, so that decision makers can take action sooner rather than later as remedial actions. Conversely, an EMIS should facilitate the identification of particularly well-performing units so that we can learn sooner rather than later about promising examples of good practice that may be transferable to other schools.



It is part of a larger policy-planning-management system driven by goals and objectives and priorities. The EMIS itself is composed of sub-components each of which must be carefully managed to assure the delivery of relevant, reliable, unambiguous and timely data and information.

School based data must be collected from: teachers, students' performance, exam results, finance sector, administrative personnel and the environment. It must also be analyzed, interpreted and stored systematically and then, disseminated to concerned bodies on time. This can be practical if management or administration is committed to promote the use of technology and able to shape individuals' beliefs that technology is useful for work activities. *Lessen and Sorensen (2000)*, tell us that making the use of technology as priority, and establishing a technological infrastructure, focusing on development and creating training opportunities for staff can be one way in which administrators can promote the integration of technology between offices.

Same scholars add that primarily, it is the role of the leader to set the priorities for the staff, although these priorities may have been developed collaboratively with the staff. These priorities should include the integration of technology in key aspects of the office activities and life. They also note that the principal should be seen as not just a promoter but as a user of the technology and should set expectations for staff regarding the use of the technology, beginning with the hiring of new staff. In addition to this, the administrator is responsible for creating an environment where the integration of technology is possible and that includes providing access to appropriate technological tools. This means that staff should get access to the system in their offices. According to *Robertson,( 2005)*, implementation of information management means deploying new technology solutions, such as software, data warehousing or portal applications.

Thus, successful management of education systems today, require effective use of the IT tools for providing smooth operations, to enhance policy-making, teaching and learning research and monitoring and evaluating through data and information. Establishing a technological infrastructure also means providing adequate budgetary resources not just for technology acquisition but for maintenance and investing in adequate support personnel to coordinate all technology activities. This could be practical by EMIS coordinators acting on the coordination of EMIS activities in educational administrative offices.

It is thus, pertinent duty of management to ensure the provision of training and support in order to develop successful and effective users of technology.

According to *Robertson*, the training could be conducted in the form of one-on-one sessions, small group workshops or peer training, where for example, one staff member who has received training can pass on similar training to colleagues & downwards. Based on this, the uses of technology can be seen in two ways; uses for teaching and learning and uses for professional or personal development. With reference to the implementation of EMIS, if one or more professionals are successfully using the system over a long period of time or if sustained professional development is provided for the staff, it is more likely to survive. Hence, other workers will have a positive perception of the EMIS and will be motivated to use it. Therefore, using the EMIS fully means, a change from the manual system of managing information to an electronic one, which involves a total transformation of information management at all levels.

## **2.5 The Role of EMIS at Zonal and Woreda Level**

In Ethiopia, the Zone Education Office (ZEO) is an administrative level that is involved, to some degree, in the management of the statistical chain, with the noticeable exception of the Oromiya Region which handles its own data capture of questionnaires. All the other zones play a purely administrative role limited to transmission alone, which is justified by the hierarchical position of these structures in the organization chart. *UNESCO,(2003/2004)*. Information management at zonal education office is based on collecting data from woredas, interpreting and using some for planning professional development, text book distribution, resource allocation and training purposes. Other data that is needed by the region is sent to OEB.

Zones need information for planning purposes. They prepare plans for services that are cross-woredas. These include technical vocational education, construction of secondary schools and provision of textbooks, under the guidelines from OEB. One of the critical planning functions at zonal level is to determine the locations for construction of secondary schools. A number of criteria are used, such as population of students, school-age population, enrolment in primary school, need for resource and distance from the nearest high school.

According to *ESDP II (2003)* description, zonal educational offices are also responsible for personnel information systems. *BESO* is developing the Personnel Management Information System (PMIS), which collects very detailed information. Woredas collect the data that are captured at the zonal level. The personnel department mainly uses this information for administrative purposes, but in future this has the potential to be linked with EMIS.

The woredas are the nearest education offices that can easily and frequently communicate with schools and get first hand information. According to the guideline in the education decentralization, the budgetary aspects connected with the financial management of schools are fundamental to the woreda education offices. In principle, woredas are the most responsible sectors to gather, reliable data from schools & environment, retrieve and send to the zones in time. *UNESCO Document (2004)*, states that the woredas are in the process of acquiring real administrative autonomy and are responsible for the delivery of local government services across all sectors.

In the budget planning process, WEOs need data on the number of teachers, new recruits, enrolment and the number of classrooms constructed, and use these data to make projections for the upcoming school year. An important element of the woreda plans concerns the construction of new primary schools. Data needs and planning approaches are similar to those employed by the regional bureau to determine location of new schools in regards to population, school-age population, and distance from the nearest school, etc.

The explanation regarding the information exchange between schools & woredas takes place in a number of schools visited, to be provided information on teachers and qualifications, enrolment and school supplies and infrastructure, as well as for budgeting and planning purposes. Schools are required to produce a strategic plan for the upcoming three years, based on a common format.

This is one documentary point from where data are collected by the ZEO so as to provide help. This doesn't stop here; it will be processed to the region's education office. The explanation from EMIS panel discussion states that MOE is on process to actualize the system linkage from schools up to ministry of education.

In addition to this, *The Federal EMIS Panel, (2004)*, in its statement on ("*The Aim of EMIS for Quality Education*"), reminds that linkage of school census and examinations data will yield several additional indicators on the quality of education from a national perspective, based on the proxy of examination results.

This will include derivation of indicators on exam results by rural versus urban areas; socio-economic status characteristics of the parents; school infrastructure and supplies; and teacher qualifications. Such indicators and analyses will be helpful in identifying factors impacting data quality to help influence policy formulation. Upon this, we can sense that there are some indicators flashing hopes for sustainable linkage among schools, WEO, ZEO, REB and MOE with the development of EMIS.

## **2.6 The Role of EMIS in Education Provision**

Teachers are normally considered to be central to the learning process. Teachers' use of EMIS grows stronger & sustainable when supported by due information.

*Kafui , et. al. (2012)*, say that teachers use information for planning, organizing, presenting, creating team learning habit and promoting quality of education. A shift in the role of a teacher utilizing information and its technology to that of a facilitator does not necessitate the need for teachers to serve as leaders in the classroom. In other words, lesson planning is vital when supported by EMIS, but where there is little planning, students work is often unfocused. Knowing how to operate its technology can enable teachers to transform their experiences through the program of involvement in the utilization of information system. Furthermore, teachers' pedagogical practices and reasoning influence their uses of Information Technology, and brings impacts on students' achievement. The most effective uses of EMIS and its technology are those in which the teachers understand the role of EMIS and plan to utilize it pertinently.

When teaching is supported by proper technology, the lesson will be enriched, and this enhances pupils' understanding and thinking, either through class interaction or self-access to internet. Thus, the development of EMIS & its proper utilization through technology are seen as important tools to enable and support the move from traditional teacher-centric teaching styles to more learner-centric methods of which the aim is to ensure quality of education.

InfoDev. Article, "*Knowledge Maps: ICTs in Education*," (2005), complements the above stated utilization of EMIS & its technology in varied explanations as follow.

We know that technology changes rapidly and newer, more cost effective and more powerful technologies will continue to emerge of potential use in education. At the same time, evidence shows that, once installed in schools, info. Technologies continue to be used for the life of the functioning of the technology, especially, as upgrade paths are seldom part of initial planning. The use of technology in everyday teaching and learning activities appears to be more important than specific instruction in computer classes. While the development of technology skills is seen to have a role in the teaching and learning process, it is more important as an enabler of other teaching and learning practices. Evidence shows that when teachers use their knowledge of both the subject and the way pupils understand the subject; their use of IT will have a more direct effect on student achievement.

In addition, professional development activities can model effective practices and behaviors to encourage and support collaboration between teachers. On-going professional development at the school level, using available IT facilities, is seen as a key driver for success, especially when focused on the resources and skills directly relevant to teachers' everyday needs and practices.

The structure of EMIS in educational administration has been laid as important mechanism, and driver for educational reform being utilized in many ways: as both a ladder for organizational change and a vehicle to introduce new teaching and learning practices. Indeed, introducing technology alone will not change the teaching and learning process. However, ITs should enable teachers to transform their teaching practices. Now, it is imaginable that EMIS can be used to support and change existing teaching practices.

Pedagogical practices of teachers using info. System can range from only small enhancements of teaching practices, using what are essentially traditional methods, to more fundamental changes in their approach. It can also change the way teachers and students interact. Access to information is considered to be one of the most important benefits of the uses of information in education. Generally, improving all aspects of the quality of education and ensuring excellence of all practices could let recognized and measurable learning outcomes be achieved.

This is realized by the proper implementation of EMIS for it improves teachers' professional development and students' achievement.

## **2.7 The Challenges in Developing EMIS in Education Management**

The prevailing educational situation in many primary and secondary schools is generally characterized by difficulties and problems in two basic areas; the quality of data and the management system. *Charles,(2003)*, states the quality of data and information in education has been a focus of concern due to a number of reported errors, inaccuracies, inconsistencies and misinterpretations. The inability of management to provide an adequate support system has contributed to the seriousness of the problem. The poor structures, frequent changes of concepts and definitions of objectives, the lack of trained and qualified staff, poor direction and organization and a shortage of hardware and software are among the most obvious setbacks of most education managers.

This is emphasized by *Tegegn* like this;

"The challenge of EMIS management is to get dedicated professionals and workers who have vision to improve the situation and embark into a continuous managing environment and do away with 'control' and 'command' type of leadership. Such a management style works for the advantage of the team members within the unit.

As we are in a fast changing information era, we can't survive without mutual effort and continuous learning through team building, mutual support, continuous learning and correct assessment, and understanding of the environment we are in. The central EMIS unit of the system has the responsibility of creating an objective oriented, user-focused team spirit in the provincial, district offices and schools with more emphasis to school level information systems organization and use."

That means, more awareness creation and technical assistance are not given to lower level staff of which the school is the central focus. In this regard, says *Tegegn*, due focus is not given to improving the school records management system and bring it to up to date, creating awareness among education managers, information coordinators, and record officers and promoting information use for planning and decision making in the office.

*Tom (2005)*, on the other way, listed down what he came across as globally observed challenges on EMIS development & implementation.

Some of them are:

- i. How to integrate data and data systems
- ii. How to develop skills in data use at all levels
- iii. Whether, or not, to develop student-record based EMIS
- iv. How to manage the increasing technology choices that are available to schools
- v. How to motivate staff to higher levels of performance
- vi. The effort to develop Information and Communications Policy.

It is also said that in the absence of EMIS, filing systems remain manual and disorganized. The communication arrangements are also not able to facilitate the transmission of information from the environment and schools to woredas & zonal education offices.

According to *Tegegn's* further explanation, a lack of available human resource capacity significantly limits EMIS development. Building human resource capacity has long been known to a critical factor in the success of EMIS development.

Limited capacity for more effective use of data in management and decision making, particularly at zone, woreda and school levels, is often cited by local educators and external evaluators as a critical factor limiting the development of EMIS in schools throughout regions.

Several categories of knowledge and skills are often referenced as deficient: (i) knowledge and skills to lead and manage EMIS development; (ii) knowledge and skills to use technology; and (iii) knowledge and skills to use data effectively for decision making, policy analysis and planning. Lack of knowledge and skills to use data and information is not so much limiting EMIS development as it is limiting development of the education system.

Achieving the goals of quality, equality and equity requires new knowledge and skills at all levels and in all job categories from teachers and principals to regional and national level educators. Thus, for various reasons, there is a gap in current practice regarding the implementation of Education Management Information Systems at offices.

The development of computer-based data and information management system is stated as one of its issues by *The Ethiopian Ministry of Education (2002)*, especially to computerize the annual school census conducted in all regions, zones, woredas and schools of the country. However, the knowledge gap in its general aspect continued to be focal issue; besides this, it is said to note that the development of education management in all regions remains a low priority in terms of resource allocation in government organizations. Not only is this, but also, the establishment of a functional EMIS is also affected by a number of problems in all parts of the country.

According to *UNESCO Document (2003)*, The Deputy Minister of Education has acknowledged the various problems that restrict the ministry to fully implement a national EMIS and more so in the oblast level. Both human and non human resources are inadequate to meet the requirements; the present system of data collection does not have a standard system;

no clear-cut policy to be observed in the collection, submission, processing and utilization of data; data are not clearly defined and not regularly collected. These are the challenges facing the country that need to be addressed so that EMIS can be evolved as an important tool in generating and utilizing data and information vital to management and potential users. In advanced countries, the utilization of EMIS has reached highest level in such a way that it enables managers to collect, process and disseminate student centered data to those who are in need.

*Tom (2005)* complements the above stated idea, "The idea being raised in many countries is, about whether or not, to call for the development of individual student-based EMIS. Proponents of such systems often point to the need for individual student records to monitor the progress of all students and to support student-based financing schemes, which are emerging in a number of countries. It is conceptually straight-forward and not particularly difficult to accomplish technically.

Experience in other countries suggests that the decision to build an EMIS up from individual student records up to region should be, however, weighed carefully against existing management capacities, administrative-bureaucratic discipline and available resources."



"In practical terms, the major objectives of an EMIS are to make genuine & practicable decisions and to provide guidelines to professionals in the sector. However, the prime questions before the start are: who has organizational authority, responsibility and accountability for collecting what data, from whom, when and for what purposes? And who can store and maintain what types of data and information? Besides, the needs to answer these questions, EMIS development is becoming more and more complex and requires much more time & technique to organize in the way it should be, while increasingly projects tend to give more attention to human resource development, on strengthening technical skills & to build, maintain and use the EMIS. When setting out to develop a comprehensive computer-based education management information system (EMIS), one should bear in mind that professional development and training means to build capacities for data use at management levels, and to build the necessary technical capacity to sustain, strengthen and extend EMIS in the future. Leaving professional development and training to one-off or short-term project related activities is not working for EMIS development. Consequently, many data users are troubled by low validity of data as well as unseemliness and inaccessibility." *Ibid,(p 64).*

Inadequate manpower to process data at schools has contributed to inaccuracy of data and information. Some schools do not keep proper records, which is difficult for heads of schools to accurately fill in the data forms. This is probably practiced due to lack of feedback and dissemination of data to the school level, as well as lack of motivation.

Moreover, even if various education data has been collected from schools, the very critical question is how much data is processed and utilized out of the collected data and how much data reached the policy makers and other users.

Dissemination and utilization of data at various levels are, thus, the most lacking components in EMIS. UNESCO Document on "*EDUCATION FOR ALL (EFA) PLAN OF ACTION,*" (2002-2015), explains six challenges caused by the staff and short of resources as follow. 'Obstacles to Effective Participation, which need to be considered by educational managers':

- No traditions or culture of participation, in some places, cultural values pose most importance upon decisions made at the government level.

There is little or no experience in this kind of participation and therefore communities are unable or unwilling to participate. In addition, differences of class, religion or ethnicity within the community could lead to domination by the local elite and effectively limit the involvement of others in decision-making.

- Individuals, as well as the education systems within which they work, can be resistant to change or unable to change.

For example, during an innovative literacy program, in which children produce their own texts for the school library, some teachers may be concerned only that the texts do not interfere with the academic-oriented aspects of the curriculum.

- Lack of resources which refers to finances, personnel, voluntary labor and time. Busy teachers and parents struggling for survival do not find it easy to participate in time-consuming activities such as meetings or helping to collect information for an EMIS.

The passivity and illiteracy in some communities adds to the problem, and where there is little funding available to the school, or when guidance does not come from regional or central EMIS centers, educational staff may see participation as not worth their effort.

- Lack of skills and knowledge, i.e. Participation by the community in education requires certain knowledge and skills often not easy for an education system to foster. For example, parents encouraged to look more actively at their children's schooling must be educated to look beyond examination results to see other benefits, such as life skills training, that should receive equal attention. In relation to an EMIS, it is important that those who are to participate in information collection or analysis are committed to it, and also receive appropriate training for their role in data collection.

- Physical distances, as well as the time taken to travel between zones and districts, make participation for some participants very difficult, if not impossible. This is made more burdensome by inadequate roads and lack of transport.

- Cultural factors and family obligations in many countries prohibit participation by women in the evenings. This obstacle is particularly significant constraint for an EMIS where timely reporting of data is concerned. It may be necessary, for example, to come up with new faster ways for the communication of data in some places.

## 2.8 Development and Implementation of EMIS

The establishment and development of education management information system should structurally begin with organizing its department that is equipped with all the accessories of information technology. Well organized room with capable server, computers, local and global networks, discs databases, software, hardware and enough storage. Following this should be professionals or experts, known as coordinators who are responsible for data collecting, processing, organizing, interpreting and disseminating to the users. Other thing worth mentioning is the awareness of all staff on the importance and use of EMIS, because the participation of the community in collecting, submitting and using data is above all the corner stone of sustainability of the system in the management system.

*Charles (2003), EMIS Consultant* tells that 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, the Ministry of Education being the first. 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 have already undertaken independent ongoing information activities for which they have sole responsibility. 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 a growing privately-funded sector, 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.

According to *Charles*, a well-planned and designed EMIS will facilitate the undertaking of sequential activities related to the development of a functional EMIS.

The sequences are:

**First stage:** definition of the national development goals; statement of mission and objectives of the education system; and setting short and long-range targets.

The mandates of the constitution on education and other relevant educational legislations have to be carefully reviewed with reference to the development of the management information system.

**Second stage:** policy decision for purposes of implementation and monitoring. The resources needed to establish the EMIS are identified at this stage of the development. It is critical to determine the appropriate manpower to operate the system, the cost of services and activities, the overall structure, the timetable of activities and the overall strategies of implementation.

**Third stage:** identification of data needs and requirements.

The necessary data needed to support the various measures in determining the attainment of the objectives of the system shall be carefully identified through consultations with the different sectors, and key officials, school administrators and other potential data users.

**Fourth stage:** establishment of databases. A database is an integrated collection of data and information, organized and stored in a manner that facilitates retrieval. Both manual and computer based databases determine the nature of the files or the filing system.

**Fifth stage:** design of monitoring/data gathering forms. These forms are designed to capture the required and needed data identified during the third stage of development.

**Sixth stage:** data and information collection. A manual of operation has to be prepared to spell out the essential information about data collection in terms of the objectives, the schedule of activities, guidelines for conducting the survey/data gathering, the duties and responsibilities of the monitors/surveyors and supervisors. It is also at this stage that training takes place.

**Seventh stage:** data processing. A system of data verification and control procedures should be applied before processing takes place. These forms are verified as to the accuracy and consistency of the data entries. All data elements are coded according to the system designed by the programmer.

**Eighth stage:** data dissemination and report generation. The packaging of these data into statistical bulletins, reports, profiles and others will help facilitate the dissemination and use of the data by the users.

**Ninth stage:** evaluation of the output. The ultimate end of an EMIS is to produce relevant and timely information of good quality. The results of the evaluation process are the basis for the strengthening of the system. Besides, the spirit of team work is equally important not only for the development but also to enable the sector be competent.

### **2.8.1 Integrating Information in Relation to Education Management**

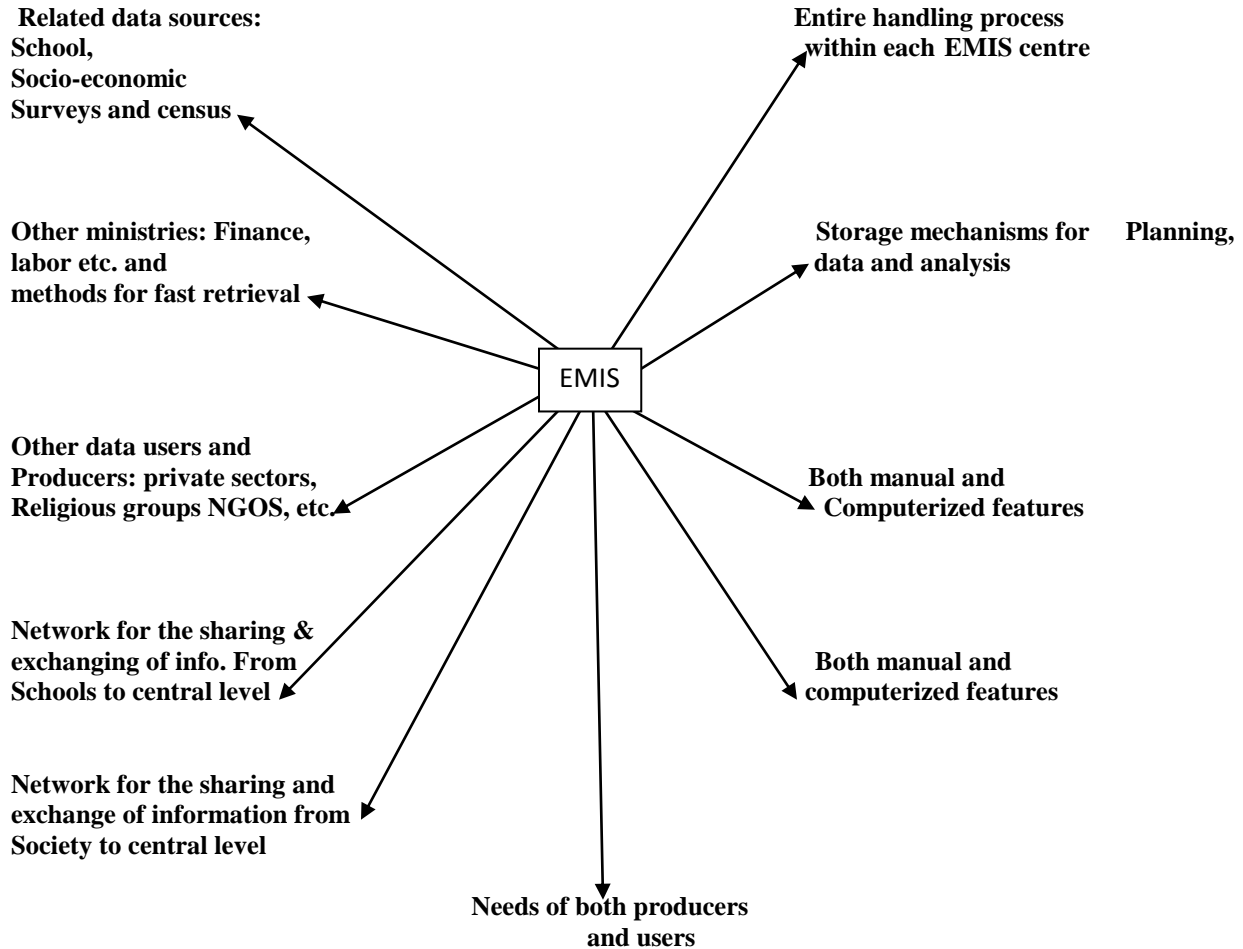
Education Management Information System runs smoothly if information from various sides is integrated systematically. Integrating information is creating center of information where it could be gathered & stored and then disseminated towards users for planning or feed-back. *UNESCO on EMIS (2004)* explained the concept & designed its structure as follow. The main purpose of an EMIS is to integrate information related to the management of educational activities, and to make it available in comprehensive yet succinct ways to a variety of users. These include teachers, principals, curriculum planners, inspectorate officials, financial controllers, planners, policy advisers and political leaders, as well as parents and students. In this way, the combined information resources of the EMIS are at the service of the entire community.

According to *UNESCO*, this is important for co-coordinating and improving dispersed efforts in the acquisition, processing, storage, transmission, analysis, repackaging, dissemination, and use of educational management information.

Hence, the underlying principles of an EMIS can be understood in terms of eight main aspects or dimensions. They are: needs of producers and users, data, information handling, storage of data, retrieval of data, data analysis, computer and manual procedures & networking are among EMIS centers that are designed in the way that the center can make direct contact back & fro.

### 2.8.2 Dimensions of Integration in an EMIS

#### Collection of Quantitative and Qualitative Data



Therefore, by establishing and maintaining a systematic inter-sectorial exchange and flow of information, an EMIS links the ministry of education to other agencies and institutions in education and other sectors that are also engaged in educational activities.

If the system is organized in such a way, educational management will be transformed into information based management. *Tegegn,(2003)* tells that, EMIS, if implemented in time can create opportunity of development of institutions formulating the short / long term policy for their growth by: creating a reservoir of talent, preparing people for future, expanding the structure, cost minimizing and succeeding in planning activities.

Therefore, to improve all aspects of the quality of education and to ensure excellence of all practices, a formalized development & experience of EMIS should be recognized so as to achieve measurable learning outcomes. This is realized if and if only proper implementation of EMIS is ensured through continuous professional development.

## CHAPTER THREE

### 3. RESERCH DESIGN AND METHODOLOGY

This part of the research presents the methodological aspects of the research, which includes research design, research method, study population, sample size and sampling techniques, data collection instruments, data analysis and interpretations and also ethical considerations

#### 3.1 Research Design

In this study descriptive survey research design is employed. Because the major goal of this study is to describe the organization and implementation of EMIS in Woreda Education Offices, as it exists at present, it is also relevant to gather detailed information concerning organization and implementation of EMIS at Woreda Education Offices. Moreover, descriptive research design makes possible the prediction of the future on the basis of findings on prevailing conditions. In line with this, *Jose & Gonzales* (1993), state that descriptive research gives a better and deeper understanding of a phenomenon which helps as a fact-finding method with adequate and accurate interpretation of the findings. Similarly, *Cohen* (1994), describes that descriptive survey research design helps to gather data at a particular point in time with the intention of describing the nature of existing condition or identifying standards against which existing conditions can be compared or determining the relationship that exist between specific event. Based on these, realities about the ongoing process of development and implementation of the EMIS at Jimma Zone & Woredas Education Offices will be assessed.

As the focus of the study is to find out the attitude of the staff towards EMIS, how data is collected & processed from schools up to the zone, the extent to which EMIS is being organized & used in the education development process and major factors that cause hindrances to practicing the system, it could be important to employ descriptive survey research design through which there is possibility to meet all concerned bodies.



### **3.2 Research Method**

In this study questionnaire was selected and used to collect quantitative data, while for the qualitative data interview is employed, *Muijs*, (2004). A survey, according to *Katharin* (2004), is a method of securing information concerning an existing phenomenon from all or selected number of respondents of the concerned universe, while interview facilitates to have or to get in-depth data on the organization of EMIS from the respecting individuals. To this line, the qualitative approach is incorporated in the study to validate and triangulate the quantitative data.

### **3.3 Source of Data**

Both Primary and secondary sources of data were targeted for this study.

#### **3.3.1. Primary source**

Primary sources of data are obtained from education offices heads, school principals, EMIS focal persons-experts, and core process owners through questionnaire and interview on organization and implementation of EMIS. These sources helped the researcher to acquire first hand information and to draw inferences. Heads of five secondary schools are included in order to check for variance if exists.

#### **3.3.2 Secondary source**

Secondary data is obtained through documentary analysis. For this purpose, the researcher is able to observe WEO's and schools' relevant documents to obtain data on the organization and implementation of EMIS (Plans & information documents of the selected schools and woredas, annual report, census document t& resource records), to reveal information for the study. According to *Bowen* (2009), document analysis implies a systematic procedure for reviewing or evaluating both printed and electronic documents of information recorded for use. He denotes, "Document analysis requires that data be examined and interpreted in order to elicit meaning, gain understanding, and develop empirical knowledge." These enable the researcher to get adequate information and analyze how information has been being utilized in the target areas. As the main aim of the researcher is to systematically examine the woredas & the zone practice in the area of EMIS, based on theoretical aspects, this will be genuine as it is done through relevant methods of data collection and analysis.

It allows the research to obtain detailed second hand & authentic information. This approach is committed to multiple views of social reality whereby responses become vital reflection of the existing facts that the researcher seeks to make out.

### 3.4 The Study Site

The sites of the population for this study are five woredas of Jimma Zone in oromiya Regional State, South Western Ethiopia. Jimma Zone is one of the Zones in the [oromiya Region](#) of [Ethiopia](#). Jimma town is the center in Jimma Zone of Oromia regional state. It is located at 335 km southwest of Addis Ababa. Its geographical coordinates are approximately 7° 41'N latitude and 36°50'E longitude. The town is found in an area of average altitude, of about 5400 ft (1780 m) above sea level. It lies in the climatic zone locally known as 'WoynaDaga' which is considered ideal for agriculture as well as human settlement.

### 3.5 Sample Population

"Population is the entire group of people to which the researcher intends the results of a study to apply to" *Aron A. et. al.(2008, p.130)*. Therefore, the populations that are included in this research are all offices heads, processes owners, experts and five school principals in Jimma Zone Education offices.

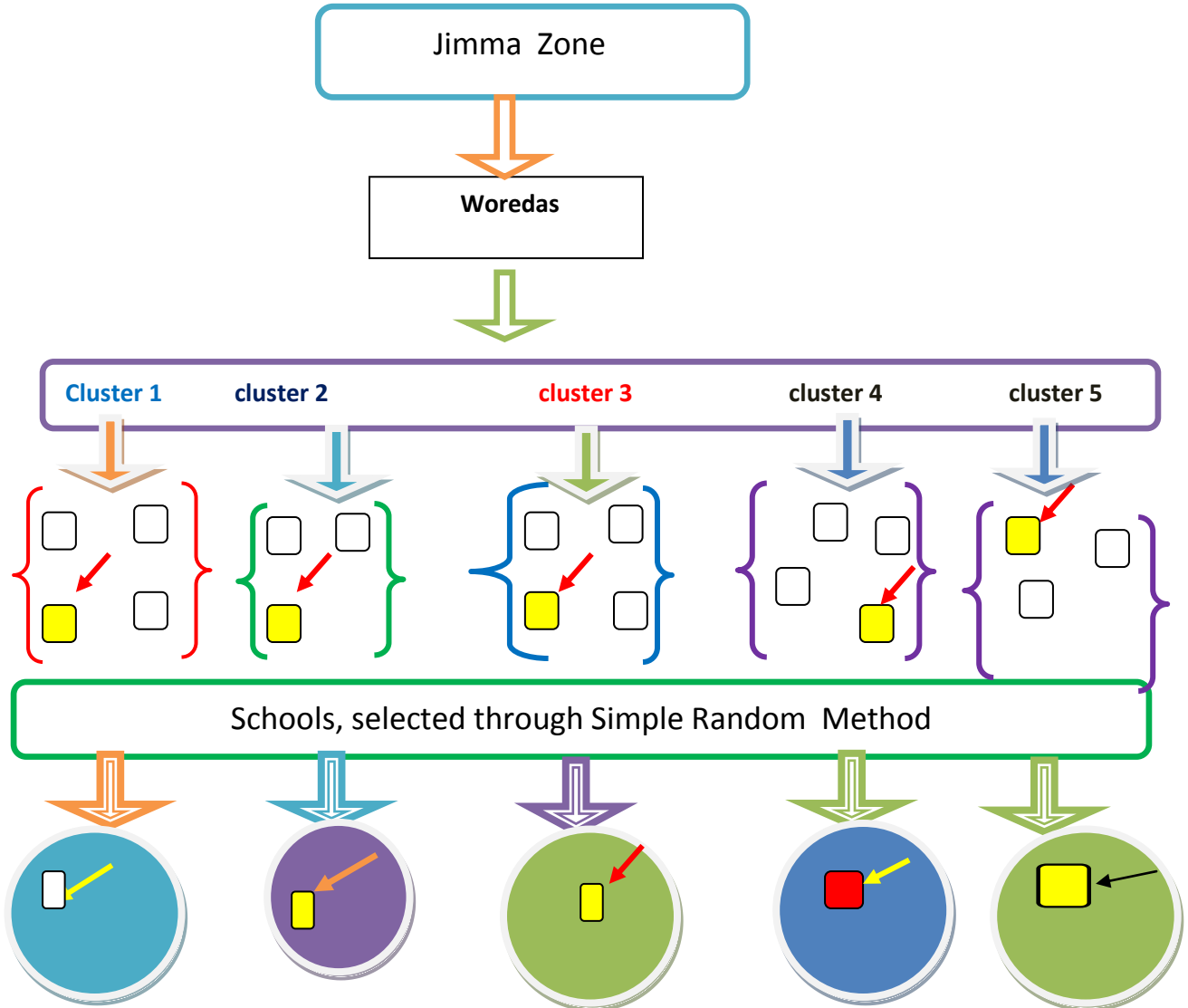
### 3.6 Sampling Techniques

In conducting research, it could be difficult to study the entire population of a given area particularly when their number is many and where problems of resources are common. Regarding this, *Ritchie and Lewis (2003)*, point out that a study can be conducted in a small geographical region due to resources and the context of the study. Likewise, this study is conducted in Jimma Zone five woredas. They are sampled using cluster sampling method.

The selected five woredas are taken from five clusters by considering proportion of the clusters from the East, West, South and North using stratified random sampling. The sample woredas are: (**Sekoru**, north , **Seka**, east, **Toba**,south, **Manna**, middle, & **Limmu**, west ) of Jimma Zone.

### 3.6.1. Chart of clustered woredas

The summary of the sampling technique is presented as follow:



As mentioned above, the sampling of the study includes all education officials/heads/, experts and process owners of the target offices. So, the researcher used, one head, 10 experts and 5 process owners from Jimma Zone Education Office, one head, 10 experts and 5 process owners from each woreda and 5 principals of five secondary schools;

a total of 6 heads (100%), 5 (100%) secondary school principals, 60 experts (100%) and 30 process owners (100%) from five woredas and zone education office.

So, the researcher included all the respondents to study as supported by *Robinson (2009)*. Totally, 101 respondents are treated in this study. Census method is used to collect all the necessary data from these respondents because they are directly concerned with the issue of the study. Besides, this number is manageable and it is easy to reach all of them within the scheduled time frame.

Table 1: The population size under the study

Name of the woreda/ Zone	Zone or woreda head			process owner			Experts			School principals		Total	
	population	participants	%	population	participant	%	population	participant	%	population	participant	No	%
Jimma Zone	1	1	100	5	5	100	10	10	100	-	-	16	100
Manna Woreda	1	1	100	5	5	100	10	10	100	1	1	17	100
Sekoru	1	1	100	5	5	100	10	10	100	1	1	17	100
Seka	1	1	100	5	5	100	10	10	100	1	1	17	100
Toba	1	1	100	5	5	100	10	10	100	1	1	17	100
Limmu	1	1	100	5	5	100	10	10	100	1	1	17	100

### 3.7. Methods of Data Collection

The data gathering tools employed in this study are questionnaires, interview and document analysis.

#### 3.7.1 Questionnaires

The questionnaire was prepared & carried out to examine the actual practice of information system at zonal and woredas management level & within their staff. It is prepared for those that have involvement in data collection & processing activities.

The questionnaire includes agreement rating scale as well as both closed & open-ended questions so as to generate statistics for the quantitative part and find out how people make use of the system. It is also meant to see to what extent they exchange data & how much of it they use.

The questionnaire is also designed to make respondents feel free while responding to the questions. It is also preferable to minimize research expense. In addition to this, they would have time to think and give their idea without bias. This enabled the researcher to infer clear & meaningful information. Of course, questionnaires have their own setbacks, out of which one can be that they do not permit the respondent to qualify the chosen response or express a more complex or subtle meaning. So, the researcher bore this in mind and managed them carefully

### **3.7.2 Interviews**

The interview was conducted after developing due questions to the participants to see their views about the importance of EMIS, implementation & its challenges. This was done considering that their experiences would contribute to the research outcomes and foster the analysis. It is designed that the researcher is to carry out the interviews with each woreda interviewees for approximately an hour time each, because, they are the first & major users of information for decision making. *Charmaz, (1991)*, says that to be effective, the interviewer must try to see the issues discussed and the immediate interaction from the respondent's perspective, that is, to adopt the respondent's role and look at the situation from their perspective instead of the interviewer's.

During semi-structured interview, different types of questions were to be used in order to obtain a wide range of information from the informants. The major types are ice-breaking, introductory, general and specific questions. The former could be to draw their attention, the second, why of the research, and how they process information, the third, about their perception on EMIS and the last is individuals' opinion on how they use EMIS & the challenges they face while practicing . The data collection begins here. Data collection and analysis are interrelated processes and that analysis begins as soon as the first bit of data is collected.

Furthermore, the researcher had to prepare necessary instruments for data collection. Some of them are: tape-recorder, cassettes, camera and stationery materials. The researcher would tape record the semi-structured interviews for it was time consuming rather than writing everything discussed, and to allow the interview flow without interruptions.

The respondents would be approached friendly so that they feel free during the interaction and to give them close attention to follow-up and catch all important ideas. *Charmaz, (1991)*, shares us his experience saying, 'Taping the interviews also provided me with the opportunity to replay them since I did not get around to writing everything that was said'. Participants had to consent before the tape recorders were used. *Dickson, (2008)* complements the approach denoting that throughout the research and observations, the more informal types of interactions take place, the more they give interesting data and information. Based on this and for proper flow of the interaction, the respondents will be assured confidentiality and that they won't be quoted directly or indirectly in this or another related document, and proper place for the interview will be prepared beforehand.

### **3.7.3 Document analysis**

Supplementary to the questionnaire and interview, document analysis is used. The documents are; plan, census statistics, resource records & and reports. The analysis regarded their accuracy, timeliness & quality. According to *Bowen (2009)*, document analysis implies a systematic procedure for reviewing or evaluating both printed and electronic documents of information recorded for use. He adds, "Document analysis requires that data be examined and interpreted in order to elicit meaning, gain understanding, and develop empirical knowledge." It was also believed that seeing into these documents would enable to assume the level of EMIS at each office. With these, the researcher believes that the necessary information is attained based on: organizing, categorizing, calculating, analyzing and interpreting the collected data for meaningful conclusion. As the researcher intended to state in this study, the documents observed in these offices appear to be untimely for they were obtained at different times before now. Similarly, it is difficult to say that the analyzed documents have quality. Because, there is no significant explanation that details how the data of the documents were gathered, processed and verified before being stored.

In three of the schools, annual plans and census statistics are not revised, and same is true with reports prepared for upper management.

Accuracy of each document was seen from their content of current population censuses of schools that are under study. Though the result of one school can't represent the whole, it was done just to check how carefully they process information.

Then, each document of each woreda education office is tabularized, ranked, a, b, c, based on their relevance to the three performance indicators set by the researcher; i.e., accuracy, quality and timeliness of the information in the documents.

Indicators\_\_ A= accuracy, Q= Quality, T= Timeliness

Rank\_\_\_\_\_ a= 3, b= 2, c= 1.

Each office is evaluated out of:  $3 \times 3 \times 4 = 36$

Table, 2: Evaluation & rank of documents

	Annual plan			Sch. Census Stat.			Resource Record			Reports Sent			Tot. Out of 36
	A	Q	T	A	Q	T	A	Q	T	A	Q	T	
Zone Educ. Office	a	a	b	a	a	c	b	b	b	a	a	a	30
Sekoru	a	b	a	a	a	b	c	c	c	b	b	a	26
Seka	a	a	a	b	c	b	b	b	b	b	b	b	26
Manna	a	a	a	a	a	a	b	b	c	a	b	a	31
Limmu Genet	a	b	b	b	a	c	b	b	b	b	c	b	24
Tobba	a	c	b	a	c	c	b	b	b	b	c	c	21
Total	18	14	15	16	14	10	11	11	10	14	11	14	

Rank 1= Manna, 2= Zone, 3= Sekoru&Seka, 4= Limmu Genet, 5= Tobba

### **3.8 Methods of Data Analysis**

The data are analyzed both quantitatively and qualitatively. The analysis of the data is based on the responses collected through questionnaires, interview and document analysis.

The data collected through agreement scale questionnaire is tallied, tabulated and filled in to SPSS version 16 and interpretation is made with help of percentage, mean, standard deviation and independent sample t-test.

Because, the percentage is used to analyze the background information of the respondents, whereas, the mean and standard deviation are derived from the data as it served as the basis for interpretation as well as to summarize it in simple and understandable way, *Aaron et al., (2008)*. The interpretations are made for all five-point scale measurements based on the following mean score results:

1.00 – 1.49 = strongly disagree, 1.50 – 2.49 = Disagree, 2.50 – 3.49 = undecided, 3.50 – 4.49 = Agree, 4.50 – 5.00 = strongly agree

Apart from this, t- test is used to test statistically significant difference between the mean scores of the two independent variables (Experts and process owners). The response differences are tested at 0.05 levels for significance.

On the other hand, the data obtained from the document analysis, and semi-structured interview is analyzed qualitatively. The qualitative analysis is done as follow. First, organizing and noting down of the different categories are made to assess what types of theme may come through the instruments to collect data with reference to the research questions. Then, transcribing and coding the data to make the analysis easy. The results are also triangulated with the quantitative findings. Finally, the findings are concluded, and recommendations are forwarded.

### **3.9 Validity and Reliability Checks**

To ensure validity of instruments, they were developed under close guidance of the advisor and a pilot study was carried out to pre-test the instruments.



Before getting into the actual study, checking the validity and reliability of data collection instruments is the core task to assure quality of the data, *Yalew Engdawoke, (1998)*. Based on this and to avoid ambiguity and unclear statements, the draft questionnaire had been first tested with the Jimma town Education Office, 5 process owners, and 10 experts. The respondents of the pilot test are not included in the actual study.

Based on the respondents' response some improvements were made on questions to make them clear and relevant to the basic questions so as to get more valuable information. For example, some questions found unnecessary were cancelled; some unclear statements were also amended.

The objectives of the pilot test were to: (1) assess the practicality and appropriateness of the questionnaire and provide an indication whether the items needed further refinement or not; (2) obtain process owners' and experts' suggestions and views about the items; (3) estimate reliability coefficients of the research questionnaires. Then, an internal consistency reliability estimate has been calculated using *Cronbach's Coefficient of Alpha* for the questionnaires. *Cronbach's Coefficient Alpha* is a general form of the *kuder Richard* formula and can be applied to multiple choices and essay exams. Coefficient Alpha compares the sum of the variances for each item with the total variance for all items. If there is high internal consistency, coefficient alpha produces a strong positive correlation coefficient. A reliability test is performed to check the consistency and accuracy of the measurement scales. One of the researchers, who found the coefficient of Alpha ( $\alpha$ ) to be 0.85, which is regarded as strong correlation coefficient, is *Jackson, (2009)*. Supporting this, *George and Mallery (2003)* and *Cohen, L., et al. (2007)* also elaborated *Cronbach's* alpha result as,  $>0.9=$  excellent,  $>0.8=$  good,  $>0.7=$  acceptable,  $<0.6=$  questionable,  $<0.5=$  poor. Finally, necessary modifications on 4 items and complete removal and replacement of 3 unclear questions were done.

**Table 3: Reliability Coefficient of the Pilot Test.**

No	Major categories of EMIS Practice	No of items	Reliability coefficient
1	Importance of EMIS	9	0.86
2	Organization and staffing of EMIS	12	0.82
3	Quality of data generated by EMIS	6	0.85
4	Utilization of EMIS	9	0.82
5	Challenges of EMIS	7	0.94
	Average reliability coefficient		0.84

### **3.10 Ethical Consideration**

Research ethics refers to the type of agreement that the researcher enters into with his or her research participants. Ethical considerations play a role in all research studies, and all researchers must be aware of, and attend to the ethical considerations related to their studies. Therefore, there are a number of ethical considerations made during the study. Voluntary participation of respondents is encouraged. Responding to interviews and responding to questionnaires requires significant time and energy and its participation could disrupt the respondents' regular activity. Depending on this, the researcher explained the objectives and significance of the study to the respondents and allowed them to exercise their right in the form of voluntary participation. To avoid any psychological dismay, questions were framed in a manner that was not offensive and doesn't disturb their personality. They were assured that the information they would provide should be kept confidential. To ensure this, the researcher hadn't included information that requires identification or names of respondents. Furthermore, the first page of the questionnaire displays an opening introductory letter that requests the respondents' cooperation to provide the required information for the study.

## CHAPTER FOUR

### 4. PRESENTATION, ANALYSIS AND INTERPRETATION OF DATA

This chapter deals with presentation, analysis and interpretation of data collected from respondents through questionnaires, interview and document analysis. The data collected from questionnaires are organized, tabularized and analyzed using percentages, mean scores, and t-test to see the difference between the mean scores. The information collected through interview and document analyses are analyzed in relation to the responses obtained through the questionnaires. Besides, the implications of the results of the analysis have been clearly discussed. Therefore, in the first part, the characteristics of respondents in terms of sex, age, educational back ground and work experience are seen. In the second part, the majority variables of interest were analyzed.

In order to answer the research questions, this chapter is built on analyzing characteristics of respondents in the zone & woreda education offices and their responses about: organization and staffing of EMIS, quality of data generated by EMIS, utilization of EMIS generated information and challenges of EMIS implementation

#### 4.1 Characteristics of Respondents

The study targeted 30 process owners and 60 Experts working in five (5) woreda and zone education offices of Jimma Zone. Apart from this, heads of the zone and each woreda education offices and secondary school principals were interviewed so as to organize & analyze the responses obtained on the organization and implementation of EMIS in their respective offices. A total of 96 questionnaires were distributed to process owners (PO) and experts of woreda and zone education offices that were included in the study. Out of 30 questionnaires distributed to PO respondents 30(100%) were filled and returned. From 66 questionnaires that were distributed to experts, 66(100%) were filled and returned, in spite of little delay. In general, out of 96 questionnaires distributed to respondents, 96(100%) were filled and returned. On the basis of the responses that were obtained, presentation, analysis and interpretation of data have been made following each table.

As one can understand, employee’s general characteristics like sex, age, qualification and work experience have an impact on the organization and implementation of EMIS and overall performance of organizational activities. With this assumption, the researcher has made analysis of the demographic characteristics of the main respondents as follow.

Table 4: Respondents' Characteristics

No	Item		Respondents				Total	
			Experts		Process owner		No	%
			No	%	No	%		
1	Sex	Male	54	81.8	28	93.3	82	85.4
		Female	12	18.2	2	2.7	14	14.6
2	Age	20-30	32	48.5	22	73.3	54	56.
		31-40	20	30.3	6	20	26	27.
		41-50	12	18.2	2	6.6	14	14
		Above 50	2	3.	-	-	-	-
3	Educational qualification	Degree	55	83.3	29	96.6	84	87.5
		Diploma	11	16.7	1	3.4	12	12.5
4	Work experience	1-5	18	27.3	18	60	36	37.5
		6-10	32	48.5	8	26.7	40	41.7
		11-15	14	21.2	4	13.3	18	18.8
		16-20	2	3.	-	-	-	-
		Above 20	-		-	-	-	-

No =number, %=percent

As table 4, indicates, out of the total 96 respondents, 30 (31.2%) are process owners and 66 (68.8%) are experts. Of the 30 Process owners, 28 (93.3%) and 2 (6.7%) are male and female respectively. And, from the total No of 66 experts, 54 (81.8%) and 12 (18.2%) are male and female respectively; this indicates that the participation of females in these positions of the offices is low. There are many factors which affect female’s access to these positions.

Among these, may be attributed to the low rate of female participation in higher education previously and other related factors such as: social attitude towards gender, interest of women, lack of role models and mentors, gender inequality in work place, lack of sufficient professionals and lack of equal employment opportunity. In terms of age distribution, 22 (73.3%) of the process owners are in the age groups of 20-30years, the rest 6 (20%) and 2(6.6%) are in the age group of 31-40 and 45-50 respectively. On the other hand, 32 (48.5%) of the experts are in the age group of 20-30, the rest 20 (30.3%), 12 (18.2%) and 2 (3%) experts are in the age group of 31-40, 20-30, 41-50 and above 50 years respectively. This shows that they all are in varied age groups and can be used as reference for experience.

Concerning educational back ground, 29 (96.6%) of the process owners and 55 (83.3%) of the experts are degree holders, whereas 1 (3.4%) of the process owners and 11 (16.7%) of the experts are diploma holders. Therefore, from this, it can be seen that, process owners' and experts' qualifications are enough to be a good opportunity for the organizational performance.

Regarding work experience, the table shows respondents' current experiences numerically & in percent. Accordingly, 4 (13.3%) 8(26.6%) and 18 (60%), of the process owners have a total experience of 6-10 years, 11-16 years , 1-5 years respectively. Similarly, 32 (48.5%), 18 (27.3%), 14 (21.2%) and 2(3%) of the experts have a total experience of 6-10 years,1-5 years, 11-15 and 16-20 years respectively. From this, it can be learned that, the sample woreda education offices have sufficient experienced process owners and experts.

## 4.2. Data on the practice and Implementation of EMIS in Zonal & Woredas Education Offices

### 4.2.1. Importance of EMIS in Offices

Table 5: respondents view regarding importance of EMIS in their office

No	Items	Respondents	X	SD	Overall X	T-value	P-value
1	EMIS Improves the quality of decision made in my section	Experts	3.66	1.08	3.59	-0.5	0.61
		Process owners	3.53	1.43			
2	EMIS improves the quality of planning in my work section	Experts	3.56	1.09	3.61	-0.40	0.68
		Process owners	3.66	1.34			
3	EMIS enhances efficient utilization of resource in my office	Experts	2.83	0.69	2.91	-0.78	0.43
		Process owners	3.00	1.38			
4	EMIS strengthen the link between schools and woreda education office	Experts	3.59	1.31	3.62	-0.26	0.79
		Process owners	3.66	1.26			
5	EMIS strengthen the link between our woreda and others	Experts	3.10	1.15	3.06	0.28	0.77
		Process owners	3.03	1.12			
6	EMIS strengthen the link between our woreda and regional Education bureau	Experts	3.61	1.05	3.55	-0.43	0.66
		Process owners	3.50	1.19			
7	EMIS improves the overall operation in my work section	Experts	2.98	0.99	3.05	-0.63	0.52
		Process owners	3.13	1.19			
8	EMIS helps to complete tasks in relatively shorter time	Experts	3.54	1.30	3.58	-0.13	0.89
		Process owner	3.62	1.27			
9	EMIS should be strengthened	Experts	4.36	0.48	4.40	-1.87	0.06
		Process owners	4.45	0.50			

X=mean, SD=standard deviation, p-value at  $\alpha=0.05$  and degree of freedom=94

Scales:-

$\leq 1.49$  = strongly disagree,  $1.5 - 2.49$  =Disagree,  $2.5 - 3.49$  = Undecided,  $3.5 - 4.49$  = Agree ,

$\geq 4.5-5$  = strongly agree. The points given are assigned for each agreement scale by providing '5' points for the five agreement scales. Then, calculated & divided the points into five equal parts that are assigned to each.

As it is revealed in item 1 of Table 5, respondents were requested to rate the degree to which EMIS improves the quality of decision made in their section. Hence, experts and process owners with the (X= 3.66, SD=1.08) and (X=3.53, SD=1.43) respectively expressed their agreement. The overall X=3.59 is indicating the agreement of the majority of respondents to the issue.

Thus, it is possible to understand that majority of the respondents believe that EMIS improves the quality of decision made in woreda education offices of Jimma Zone. The significance level ( $p=0.61$ ) is greater than 0.05, this indicates that there is no significant difference between the opinions of experts and process owners in their perception regarding the importance of EMIS in improving the quality of decision making in their offices.

As can be observed in item 2 of the same table, respondents were asked to denote whether EMIS improves the quality of planning in their work section or not. Experts and process owners with the ( $X=3.56$ ,  $SD=1.09$ ) and ( $X=3.66$ ,  $SD=1.34$ ) respectively expressed their agreement unanimously. The overall  $X=3.61$  indicates the majority of experts and process owners' view that EMIS improves the quality of planning in woreda education offices of Jimma Zone. Supporting this, *Lucey* (2005), suggests that EMIS enhance the quality and speed of information processing and management's decision making, planning and control. The significance level ( $p=0.68$ ) is greater than 0.05, this indicates that there is no considerable difference between the opinions of experts and process owners regarding the relevance of EMIS improving the quality of planning in woreda education offices.

In item number 3 of Table 5, respondents were requested to show their perception about whether EMIS enhances efficient utilization of resources in their office or not. Experts and process owners with the ( $X=2.83$ ,  $SD=0.69$ ) and ( $X=3.00$ ,  $SD=1.38$ ) respectively expressed their uncertainty about the issue. The overall  $X=2.91$  is indicating the uncertainty of the majority of respondents about the point. During the interview, woreda education office heads and school principals stated that even though EMIS generated information enhances their performance at their office, they couldn't manage it systematically to upgrade efficient utilization of resources. In the same way, the majority of respondents' replies are read in the open ended question stressing on lack of skills and knowledge that pulls back utilization of EMIS generated information in their offices.

This shows absence of proper training on modern resource utilization. In view of the information revealed above, there is a room to say that EMIS is not properly utilized to actualize efficient utilization of resources in woreda education offices. According to *Chapman (1990:5)*, educational information could be used to improve the quality of education by providing data that are used directly to secure allocated recourses, constraining bad decisions and detecting inefficient use of resources. The significance level ( $p=0.43$ ) is greater than 0.05, this indicates that there is no significant difference between the opinions of experts and process owners regarding EMIS enhancing efficient utilization of resources.

A woreda education office head forwarded his feeling;

*“...most of the trainings that have been provided by regional education bureau and zone education office were disregarding EMIS organization and implementation, and this in return affects improvement of efficient resource utilization in our offices ...”*

Regarding item 4 of table 5, respondents were asked to show their beliefs on whether or not EMIS strengthens the link between schools and woreda education offices. Experts and process owners with the ( $X= 3.59$ ,  $SD=1.31$ ) and ( $X=3.66$ ,  $SD=1.26$ ) expressed their agreement in a similar way. The overall ( $X=3.62$ ,  $SD=0.71$ ) is indicating the agreement of the majority of respondents to the issue. Thus, it is possible to take their view for grant that EMIS strengthens the link between schools and woreda education offices of Jimma Zone. The significance level ( $p=0.43$ ) is greater than 0.05, this indicates that there is no remarkable difference between the opinions of experts and process owners regarding EMIS strengthening the link between schools and woreda education office.

As can be seen in item number 5 of Table 5, experts and process owners with the ( $X= 3.10$ ,  $SD=1.15$ ) and ( $X=3.03$ ,  $SD=1.12$ ) were uncertain about whether or not EMIS strengthens the link between their woreda and others. The overall  $X=3.06$  indicates the uncertainty of the majority of respondents with this particular point. In the open ended question, majority of respondents stated their feelings with reasons that since there is no access to internet and computers in their offices, they couldn't make links with neighboring woredas and the zone to share the necessary information.



In the interview conducted, too, woreda education offices heads repeated same idea with the reason that they are not accessed to internet yet. It goes without saying that this could happen due to shortage of networking among woredas. From the above stated information, it is possible to summarize that Jimma Zone Education Offices are unable to build EMIS properly so as to have strong linkage among them. The significance level ( $p=0.77$ ) is greater than 0.05, this indicates that there is no visible difference between the opinions of experts and process owners regarding EMIS strengthening the link among all offices.

A school principal, who was English teacher prior to his post, said,

*“...for effective organization, implementation and dissemination of EMIS in and out of education offices, networking woredas with sufficient internet access has to be urgent issue of concerned bodies...”*

A woreda education office head, in support of the principal opinion, expressed what he feels,

*“...as far as quality information is needed at every hierarchy of education sector, there has to be improved structure and resource development at each level of education institution...”*

Concerning item 6 of table 5, respondents were asked whether or not EMIS strengthened the link between their woreda and regional Education bureau. Experts and process owners with the ( $X= 3.61$ ,  $SD=1.29$ ) and ( $X=3.50$ ,  $SD=1.26$ ) expressed their agreement respectively. The overall  $X=3.55$  indicates the agreement of the majority of respondents to the statement. Thus, based on the majority of respondents' responses, they have the same opinion that EMIS strengthens the link between their woreda and regional education bureau. The significance level ( $p=0.66$ ) is greater than 0.05, this indicates that there is no recognizable difference between the opinions of experts and process owners regarding EMIS strengthening the link between their woreda and regional education bureau.

In response to item 7 of the same table, experts and process owners with the ( $X= 2.98$ ,  $SD=0.99$ ) and ( $X=3.13$ ,  $SD=1.19$ ) are not sure about the issue. Their overall  $X=3.05$  is an indication for the uncertainty of the majority on this point.

The data obtained from open ended questions and interview states that the prevailing scarcity of resources is the cause for the inability to have full data coverage and failure to supply the users with complete data/information.

The weight of their opinion rests on that EMIS is not efficiently implemented at offices level, resulting in incapability to improve the overall operation of the organizations. Thus, it is possible to suggest that the majority's opinions envisage that woreda education offices are in short of systematical utilization of EMIS so as to improve the overall activities of their offices.

The significance level ( $p=0.52$ ) is greater than 0.05, this indicates that there is no significant difference between the opinions of Experts and process owners regarding the issue.

A woreda office head commented,

*“...weak verification and validation procedures, absence of dynamic reporting and analyses and delays in compilation of educational data are the main obstacles for inefficient implementation of EMIS, which in turn brings inability to improve the overall operation of the organizations...”*

Consequently, the researcher raised a question from his comment,

‘Who do you think is responsible for the problems pointed in your comment?’

He replied, *“Very good! They must be school management, woreda education offices experts and of course, Oromiya Education Office who disregarded stretching EMIS structure,”*

Regarding item 8 of table 5, respondents were asked to tell whether EMIS helps to accomplish tasks in relatively shorter time or not. To this, experts and process owners with the ( $X= 3.54$ ,  $SD=1.30$ ) and ( $X=3.62$ ,  $SD=1.27$ ) expressed their agreement respectively. The overall  $X=3.58$  is indicating the agreement of the majority of respondents to the issue. Thus, one can see that they have beliefs that EMIS helps to accomplish tasks in relatively shorter time. The data obtained from interview also complements these responses. The significance level ( $p=0.89$ ) is greater than 0.05, this indicates that there is no considerable difference between the opinions of experts and process owners regarding the issue. One of the woreda education offices head stated,

*“...frankly speaking, EMIS could have accelerated our performance ...”*

As it is learned from item 9 of Table 5, respondents were requested to show their feeling about whether EMIS should be strengthened at each level or not. Experts and process owners with the ( $X= 4.36$ ,  $SD=0.48$ ) and ( $X=4.45$ ,  $SD=0.50$ ) respectively expressed their agreement to this notion. The overall  $X=4.40$  indicates the agreement of the majority of respondents to the idea. This shows that respondents believe that EMIS should be strengthened at all levels. The significance level ( $p=0.06$ ) is greater than  $0.05$ , this indicates that there is no significant variance between the opinions of experts and process owners on this issue.

#### 4.2.2. Organization and Staffing of EMIS

Table 6: views on organization and staffing of EMIS

No	Items	Respondents	X	SD	Overall X	T-value	P-value
1	EMIS is appropriately organized at woreda level	Experts	2.43	1.08	2.40	-1.25	0.21
		Process owners	2.28	1.08			
2	EMIS is appropriately organized at school level	Experts	2.09	0.94	2.21	-1.11	0.26
		Process owners	2.33	1.09			
3	There is a clear chain of command for EMIS section	Experts	2.43	1.00	2.36	0.61	0.54
		Process owners	2.30	1.08			
4	There is an efficient communication between EMIS and other work sections	Experts	2.60	0.87	2.55	0.51	0.6
		Process owners	2.50	1.04			
5	There is an efficient communication between EMIS offices at different level	Experts	2.42	0.87	2.43	-0.88	0.38
		Process owners	2.45	1.19			
6	There is clear division of work among experts in EMIS section	Experts	3.00	1.03	3.15	-0.15	0.87
		Process owners	3.03	0.71			
7	EMIS activities are sufficiently decentralized to woreda level	Experts	4.04	0.84	3.92	1.15	0.25
		Process owners	3.80	1.18			
8	EMIS is staffed with experts with relevant training	Experts	2.42	0.86	2.37	-0.52	0.6
		Process owners	2.32	1.10			
9	EMIS is staffed with adequate experts	Experts	2.41	0.85	2.42	0.76	0.44
		Process owners	2.43	1.16			
10	There is clear job description for EMIS staff	Experts	2.62	1.03	2.51	0.90	0.37
		Process owners	2.40	1.27			
11	EMIS experts receive continuous training	Experts	2.06	0.55	2.14	-1.13	0.26
		Process owners	2.23	0.93			
12	EMIS is furnished with adequate physical resources (computers and other office furniture)	Experts	2.05	0.54	2.22	-1.12	0.25
		Process owners	2.40	0.96			

$X$ =mean,  $SD$ =standard deviation,  $p$ -value at  $\alpha=0.05$  and degree of freedom=94

As it is revealed in item 1 of Table 6, respondents were requested to state their witnesses on whether EMIS is appropriately organized at woreda level or not. Experts and process owners with the ( $X= 2.43$ ,  $SD=1.08$ ) and ( $X=2.28$ ,  $SD=1.08$ ) expressed their disagreement unanimously. The overall  $X=2.40$  indicates the disagreement of the majority of respondents to the point. Thus, their conclusion is that EMIS is not appropriately organized at woreda level. The significance level ( $p=0.21$ ) is greater than 0.05, this indicates that there is no observable difference between the opinions of experts and process owners regarding the issue.

Concerning item 2 of table 6, respondents were asked to say whether or not EMIS is appropriately organized at school level. Experts and process owners with the ( $X= 2.09$ ,  $SD=0.94$ ) and ( $X=2.33$ ,  $SD=1.09$ ) unanimously expressed their disagreement respectively. The overall  $X=2.40$  is indicating the disagreement of the majority of respondents to the issue. Thus, EMIS is not appropriately organized at school levels, according to their opinions. The significance level ( $p=0.26$ ) is greater than 0.05, this indicates that the opinions of experts and process owners are the same regarding the issue.

In response to item 3 of the same table, experts and process owners with the ( $X= 2.43$ ,  $SD=1.00$ ) and ( $X=2.30$ ,  $SD=1.08$ ) disagree to the idea. The overall  $X=2.36$  indicates the disagreement of the majority of respondents to the issue. Thus, they denoted that there is no clear chain of command through EMIS sections. The significance level ( $p=0.54$ ) is greater than 0.05, this indicates that there is no much difference between the opinions of experts and process owners regarding the issue.

In response to item 4 of the same table, experts and process owners with the ( $X= 2.60$ ,  $SD=0.87$ ) and ( $X=2.50$ ,  $SD=1.04$ ) are not sure about the opinion. The overall  $X=2.55$  is indicating the uncertainty of the majority of respondents about the issue. The data obtained from open ended question and interview indicates that there is a gap of communication between EMIS and other sections in the organization. This shows lack of proper communication in the organization. Hence, most respondents suggest that there is short of efficient communication among EMIS and other work sections in education offices of Jimma Zone. The significance level ( $p=0.6$ ) is greater than 0.05, this indicates that there is no vital difference between the opinions of experts and process owners regarding efficient communication between EMIS and other work sections.

A Woreda education officer said that,

*“...most of the time, experts or process owners from other sections communicate with us when they only need information ... “*

Regarding item 5 of table 6, respondents were asked to indicate whether there is an efficient communication between EMIS offices at different level or not.

On this point, experts and process owners with the ( $X= 2.42$ ,  $SD=0.87$ ) and ( $X=2.45$ ,  $SD=1.19$ ) disagree to the notion that there is an efficient communication between EMIS offices at different level. The overall  $X=2.43$  indicates the disagreement of the majority of respondents to the issue. Thus, their conclusion shows absence of efficient communication between EMIS offices at different levels. The significance level ( $p=0.38$ ) is greater than 0.05, this indicates that there is no visible variance between the opinions of the two groups.

In response to item 6 of the same Table, experts and process owners with the ( $X= 3.00$ ,  $SD=1.03$ ) and ( $X=3.03$ ,  $SD=0.71$ ) are not sure about the issue. The overall  $X=3.15$  is indicating the uncertainty of the majority of respondents with the issue. The data obtained from open ended questionnaire and interview indicates that there is a gap in creating division of work in each section. This could happen due to lack of skilled man power in woreda education offices. . Thus, their suggestion generalizes on the unavailability of division of work in each section of woreda education offices. The significance level ( $p=0.89$ ) is greater than 0.05, this indicates that there is little difference between the opinions of experts and process owners regarding the issue.

Regarding item 7 of table 6, respondents were asked to point out whether EMIS activities are sufficiently decentralized to woreda level or not. Experts and process owners with the ( $X= 4.04$ ,  $SD=0.84$ ) and ( $X=3.80$ ,  $SD=1.18$ ) expressed their agreement respectively. The overall  $X=3.92$  shows the agreement of the majority of respondents to the issue. Thus, their responses can be summarized as, EMIS activities are sufficiently decentralized to woreda level.

The significance level ( $p=0.25$ ) is greater than 0.05, this indicates that there is similarity between the opinions of experts and process owners regarding the issue.

As one can see from the data in item 8 of Table 6, experts and process owners with the ( $X= 2.42$ ,  $SD=0.86$ ) and ( $X=2.32$ ,  $SD=1.10$ ) disagreed to the issue that EMIS is staffed with experts with relevant training. The overall  $X=2.37$  indicates disagreement of the majority of respondent to the notion. On this, they stated that there is lack of trained experts in EMIS of woreda education offices. The significance level ( $p=0.6$ ) is greater than 0.05, this indicates that they have similar imaginations about the staffing of experts with relevant training.

With regard to item 9 of table 6, experts and process owners with the ( $X= 2.41$ ,  $SD=0.85$ ) and ( $X=2.43$ ,  $SD=1.16$ ) respectively disagreed to the idea saying, EMIS is staffed with adequate experts. The overall  $X=2.42$  shows the disagreement of the majority of respondent to the issue. This shows that there is lack of manpower in relation to EMIS. Thus, EMIS is said to have not been staffed with adequate experts in the offices. The significance level ( $p=0.44$ ) is greater than 0.05, this indicates that there is no significant significance difference between the opinions of experts and process owners regarding the issue.

Item 10 of table 6 raises a question on whether there is clear job description for EMIS staff or not. Concerning this, experts with ( $X= 2.62$ ,  $SD=1.03$ ) are not sure about the existence of job description and process owners with the ( $X=2.40$ ,  $SD=1.27$ ) didn't agree that there is clear job description for EMIS staff. The overall  $X=2.51$  shows the uncertainty of the majority of respondent about the issue. The data obtained from open ended questionnaire and interview indicates that they are loaded with many responsibilities rather. This could happen because of lack trained & sufficient manpower in the organizations. Based on their suggestion, one can say that there is shortage of clear job description for EMIS staff in the organizations. The significance level ( $p=0.37$ ) is greater than 0.05, this indicates that the opinions of experts and process owners are in conformity.

As can be seen from item 11 of table 6, experts and process owners with the ( $X= 2.06$ ,  $SD=0.55$ ) and ( $X=2.23$ ,  $SD=0.93$ ) disagreed to the idea EMIS experts receiving continuous training.

The overall  $X=2.14$  is indicating the disagreement of the majority of respondent to the opinion. Thus, it is possible to summarize their opinion in such a way that EMIS experts lack continuous training in woreda education offices of Jimma Zone. Regarding this, *Cowling and Mailer, 91998:6 1*), suggest that to cope up with very dynamic and ever changing environment, organizations need to train and develop their human resources continuously. The significance level ( $p=0.26$ ) is greater than 0.05, and shows that the opinions of experts and process owners are not far apart regarding this issue.

With regard to item 12 of table 6, experts and process owners with the ( $X= 2.05$ ,  $SD=0.53$ ) and ( $X=2.40$ ,  $SD=0.96$ ) respectively disagreed to the idea EMIS is well furnished with adequate physical resources (computers and other office furniture).

The overall  $X=2.22$  points out the disagreement of the majority of respondent to the idea. Thus, when we view their idea, EMIS is not well furnished with adequate physical resources (computers and other office furniture) in Jimma Zone education offices. Data obtained from interview substantiates the opinion of experts and process owners. The significance level ( $p=0.25$ ) is greater than 0.05, and hence, the responses of the two groups have no significant difference.

Another woreda education office head told the researcher,

*“... even though our woreda has received some computers from zone education office, most of them are outdated and nonfunctional...”* This can be considered as tangible evidence for the offices to have no modern information technology

### 4.2.3. Quality of Data Generated by EMIS Experts

Table 7: views on quality of data generated by EMIS experts

No	Items	Respondents	X	SD	Overall X	T-value	P-value
1	EMIS generated information are relevant	Experts	2.82	0.68	2.91	-0.57	0.61
		Process owners	3.01	1.39			
2	EMIS generated information are up to date /timely	Experts	3.56	1.00	3.60	-0.63	0.6
		Process owners	3.64	1.03			
3	EMIS generated information are clear	Experts	2.70	1.05	2.60	-0.53	0.71
		Process owners	2.50	1.10			
4	EMIS generated information are adequate; covers all important areas	Experts	2.42	1.03	2.27	0.02	0.84
		Process owners	2.13	1.13			
5	EMIS generated information are easily accessible	Experts	2.32	0.99	2.37	0.01	0.6
		Process owners	2.42	1.13			
6	EMIS generated information are reliable	Experts	3.10	1.11	2.99	-0.83	0.4
		Process owners	2.89	1.10			

X=mean, SD=standard deviation, p-value at  $\alpha=0.05$  and degree of freedom=94

As seen in item one of table 7, respondents were asked to show their feelings on whether EMIS generated information are relevant or not. Unfortunately, experts and process owners with the (X=2.82, SD=0.68) and (X=3.01, SD=1.39) are not quite sure about it.

The overall X=2.91 is indicating the uncertainty of the majority of respondent about the raised idea. The data obtained from open ended questionnaire and interview denotes that due to time stress created by urgent demand for information from regional education bureau & zone education office, and inaccuracy in processing data, some schools transfer irrelevant information to woreda education offices.

This implies that EMIS generated information lacks relevance. According to *Welsh (1990: 95)* an EMIS is a mechanism that will hopefully reorient the information structure in a way that will avoid the expansion of irrelevancy within the education system and the consequent wastage of resources and human potentials. The significance level (p=0.61) is greater than 0.05, this indicates that there is no as such variance between the opinions of experts and process owners.



One of the woreda education offices head said that,

*“...because of untimely request of data from top level managers ,we sometimes fail to get relevant data from lower level of managers or school leaders ...”*

One of the school principals expressed supplementary idea as follow.

*“...without any explanation or detail information we are requested by top level managers to fill large and complex data format urgently and be exposed to making errors...”*

With regard to item 2 of table 7, respondents were asked to tell whether EMIS generated information are up to date /timely or not. Experts and process owners with the ( $X= 3.56$ ,  $SD=1.00$ ) and ( $X=3.64$ ,  $SD=1.03$ ) agreed that EMIS generated information are up to date /timely. The overall  $X=3.60$  shows the agreement of the majority of respondent to the issue. Thus, their general conclusion is that EMIS generated information are up to date /timely. The significance level ( $p=0.61$ ) is greater than 0.05, in which there is almost high similarity between the opinions of experts and process owners regarding the issue.

*In the document analysis, it is detected that some school principals send only annual, semi-annual and quarter reports which are meant to be information for the calendar year.*

*The experts' feedback further shows that managers in the lower structure are communicating information in the way that, they believe, can secure their responsibility.*

Regarding item 3 of table 7, respondents were asked to show their perceptions about whether EMIS generated information are clear or not. Apparently, experts and process owners with the ( $X= 2.7$ ,  $SD=1.05$ ) and ( $X=2.5$ ,  $SD=1.10$ ) are not sure whether EMIS generated information are clear or not. The overall  $X=2.6$  is indicating the uncertainty of the majority of respondent about the issue. The data obtained from open ended questions indicates that due to the untimely & urgent demands for data from top management, data prepared & sent from low level management or record keepers lack clarity.

During the interview, woreda education office heads and school principals stated that the unprogrammed and unplanned demand for information from upper managers leads lower level managers to transferring ambiguous data. The significance level ( $p=0.71$ ) is greater than 0.05, this indicates that experts and process owners agree on this opinion.

One school principal said that,

*“...sometimes, we are asked by different users to give them too much information at a time. They need so much information on variety of topics that we all get pressured and fail to produce clear data ...”*

Concerning item 4 of the same table, respondents were requested to say whether EMIS generated information are adequate; covers all important areas, or not. Experts and process owners with the ( $X=2.42$ ,  $SD=1.03$ ) and ( $X=2.13$ ,  $SD=1.13$ ) respectively disagreed that EMIS generated information are adequate; covers all important areas. The overall  $X=2.27$  indicates the disagreement of the majority of respondent to the raised idea. In the document analysis, it was identified that in most of the schools, annual and semi-annual reports disregard physical facilities such as, structure of building, condition of class rooms, class facilities, sports fields and the like. The significance level ( $p=0.84$ ) is greater than 0.05, this indicates that there is similarity between the opinions of experts and process owners regarding the issue.

Item 5 of the same table, respondents were asked whether EMIS generated information are easily accessible or not. Experts with the ( $X=2.66$ ,  $SD=1.04$ ) are not sure about the issue and process owners with the ( $X=2.42$ ,  $SD=1.13$ ) disagreed that EMIS generated information are easily accessible. The overall  $X=2.37$  is indicating the disagreement of the majority of respondent to the notion. The data obtained from open ended questionnaire, document analysis and interview indicates that there is a gap in making data easily accessible to all concerned bodies and customers. This shows that there is a gap in making data easily accessible in woreda education offices.

The significance level ( $p=0.6$ ) is greater than 0.05, this indicates that the opinions of experts and process owners are in complementary regarding the issue.

*Sack and Saidi, (1997: 44-68)* have pointed out that EMIS can be characterized by; the quantity of information it produces, the quality of that information, the availability of the information to the concerned people inside and outside the organization, and the time it takes for the information to become available and used.

Item 6 of the same table, respondents were asked to state whether EMIS generated information are reliable or not. Concerning this, experts and process owners with the ( $X= 3.10$ ,  $SD=1.11$ ) and ( $X=2.89$ ,  $SD=1.10$ ) are not sure about EMIS generated information's reliability. The overall  $X=2.99$  is indicating the uncertainty of the majority of respondent about this. The data obtained from open ended questionnaire, document analysis and interview reveals that there are exaggerated data of statistics in some cases. This shows that EMIS generated information suffers lack of reliability to some extent in woreda education offices of Jimma Zone. The significance level ( $p=0.4$ ) is greater than 0.05, this indicates that there is no significant difference between the responses of experts and process owners regarding the issue. According to *Windham et.al.(1990:83-84)*, it is imperative that a well-organized Education Management Information System that is capable of providing relevant, accurate, and timely information to each of these groups is a top priority and area of concern to any educational system.

One office head said,

*“... sometimes, information generated from schools comes with exaggerated data based on their own ambitions ...”*

In the document analysis, it is identified that some schools report over existing number of students to secure extra number of text books for the future and to get additional school grant.

#### 4.2.4 Utilization of EMIS Generated information

Table 8: views on utilization of EMIS information

No	Items	Respondents	X	SD	Overall X	T-value	P-value
1	My office uses EMIS generated information for human resource planning	Experts	3.80	1.04	3.83	0.26	0.79
		Process owners	3.86	1.22			
2	My office uses EMIS generated information for financial planning	Experts	4.04	0.88	3.97	0.72	0.46
		Process owners	3.90	0.95			
3	My office uses EMIS generated information for physical resource planning	Experts	3.00	1.18	3.21	-1.59	0.11
		Process owners	3.43	1.33			
4	My office uses EMIS generated information for efficient resource utilization	Experts	2.41	1.12	2.40	1.31	0.19
		Process owners	2.40	1.19			
5	My office uses EMIS generated information for monitoring of office activities	Experts	2.36	0.98	2.26	0.90	0.36
		Process owners	2.16	0.97			
6	My office uses EMIS generated information for evaluation of office activities	Experts	2.40	0.96	2.40	0.04	0.96
		Process owners	2.40	1.10			
7	My office uses EMIS generated information for record keeping	Experts	3.62	1.03	3.69	-0.61	0.6
		Process owners	3.76	1.13			
8	My office uses EMIS generated information for strategic planning	Experts	3.21	1.10	3.07	1.14	0.25
		Process owners	2.93	1.11			
9	My office uses EMIS generated information for school development	Experts	3.42	0.94	3.45	-0.47	0.63
		Process owners	3.49	1.22			

X=mean, SD=standard deviation, p-value at  $\alpha=0.05$  and degree of freedom=94

As revealed in item 1 of table 8, respondents were asked to tell us if their offices use EMIS generated information for human resource planning. Experts and process owners with the (X= 3.80, SD=1.04) and (X=3.86, SD=1.22) agreed that their offices use EMIS generated information for human resource planning. The overall X=3.83 is showing the agreement of the majority.

Thus, their opinion is that woreda education offices of Jimma Zone are using EMIS generated information for human resource planning. The significance level ( $p=0.79$ ) is greater than 0.05, this indicates that the two parts responses are in complementary on the opinion.

Concerning item 2 of table 8, respondents were asked to tell if their office uses EMIS generated information for financial planning. Similarly, experts and process owners with the ( $X= 4.04$ ,  $SD=0.88$ ) and ( $X=3.96$ ,  $SD=0.95$ ) agreed that their offices use EMIS generated information for financial planning. The overall  $X=3.97$  indicates the agreement of the majority of respondents to the statement. Thus, they gave their witness that woreda education offices of Jimma Zone are utilizing EMIS generated information for financial planning. The significance level ( $p=0.46$ ) is greater than 0.05, this tells us that there is similarity between the opinions of Experts and process owners regarding the issue.

In item 3 of the same table, respondents were requested to indicate if their offices use EMIS generated information for physical resource planning. These same groups with the ( $X= 3.00$ ,  $SD=1.18$ ) and ( $X=3.43$ ,  $SD=1.33$ ) noted that they are not sure about the issue. The overall  $X=3.21$  shows uncertainty of the majority of respondent about the issue. The data obtained from open ended questionnaire, document analysis and interview clarifies that what they know is, they use it while planning for finance & stationary materials that are requested from the schools. Actually, resource doesn't mean only stationery materials, and thus, the utilization of EMIS generated information concerning this activity cannot be said complete. The significance level ( $p=0.11$ ) is greater than 0.05, this indicates that there is no significant difference between the responses of experts and process owners regarding this point. From this, we can see that using EMIS generated information for physical resource planning is almost unreliable in woreda education offices of Jimma Zone.

Regarding item 4 of table 8, the two groups were asked to indicate whether their offices use EMIS generated information for efficient resource utilization or not. Experts and process owners with the ( $X= 2.41$ ,  $SD=1.12$ ) and ( $X=2.40$ ,  $SD=1.19$ ) respectively, disagreed to the opinion that their office use EMIS generated information for efficient resource utilization. The overall  $X=2.40$  is showing the disagreement of the majority of respondents to the issue.

The significance level ( $p=0.36$ ) is greater than 0.05, this indicates that they have similar opinions regarding the issue. From the data, it can be deduced that using EMIS generated information for physical resource planning is almost far from the system in woreda education offices of Jimma Zone.

Concerning item 5 of table 8, respondents were asked to tell whether their offices use EMIS generated information for monitoring office activities. Experts and process owners with the ( $X= 2.36$ ,  $SD=0.98$ ) and ( $X=2.16$ ,  $SD=0.97$ ) disagreed to the statement that their offices use EMIS generated information for monitoring office activities. The overall  $X=2.26$  indicates the disagreement of the majority of respondents to the issue. Thus, it is to see that the respondents have opinion that woreda education offices are not good at using EMIS generated information for monitoring office activities. The significance level ( $p=0.79$ ) is greater than 0.05, this indicates that there is no significant difference between the responses of experts and process owners regarding the point raised.

Regarding item 6 of table 8, respondents were asked to say if their offices use EMIS generated information for evaluating office activities. Experts and process owners with the ( $X= 2.40$ ,  $SD=0.96$ ) and ( $X=2.40$ ,  $SD=1.10$ ) disagreed that their offices use EMIS generated information for evaluating office activities. The overall  $X=2.40$  is indicating the disagreement of the majority of respondents to the issue. Thus, they are saying that woreda education offices are not good at using EMIS generated information to evaluate office activities. The significance level ( $p=0.96$ ) is greater than 0.05, this indicates that there is no significant difference between the opinions of experts and process owners.

As it is shown in item 7 of table 8, experts and process owners with the ( $X= 3.63$ ,  $SD=1.03$ ) and ( $X=3.76$ ,  $SD=1.13$ ) agreed that their offices use EMIS generated information for record keeping. The overall  $X=3.69$  shows agreement of the majority of respondent to the idea. Thus, one can see that woreda education offices are in a good position to use EMIS generated information for record keeping. The data obtained from open ended questionnaire, document analysis and interview substantiates the responses of experts and process owners. The significance level ( $p=0.6$ ) is greater than 0.05, this indicates that experts and process owners gave similar responses regarding their offices using EMIS generated information for record keeping.

A head of a woreda education office stated,

*“...we receive & keep almost all data sent from the schools in secured place ...”*

With regard to item 8 of table 8, experts and process owners with the ( $X= 3.21$ ,  $SD=1.10$ ) and ( $X=2.93$ ,  $SD=1.11$ ) are not sure whether their offices use EMIS generated information for strategic planning or not. The overall  $X=3.07$  shows the uncertainty of the majority of respondent about the issue. Likewise, the data obtained from open ended questionnaire, document analysis and interview indicates that some woreda education offices rarely use EMIS generated information for strategic planning. This can be due to the nature of strategic planning, being prepared every three years. *Koory and Medley (1987: 225)*, denote that “Information is the basis for planning, management and knowledge.” The significance level ( $p=0.25$ ) is greater than 0.05, from which we can see that there is no much difference between the responses of experts and process owners regarding the offices using EMIS generated information for strategic planning.

Concerning item 9 of the same table, experts and process owners with the ( $X= 3.43$ ,  $SD=0.94$ ) and ( $X=3.47$ ,  $SD=1.22$ ) are also not sure that their offices use EMIS generated information for school development. The overall  $X=3.45$  is indicating the uncertainty of the majority of respondent about this point. Likewise, the data obtained from open ended questionnaire and interview indicates that woreda education offices use EMIS mainly for reporting rather than for school development. This, as they pointed out, is due to inadequate budget allocated for woreda education offices from the region. The significance level ( $p=0.63$ ) is greater than 0.05, this indicates similarity between the responses of experts and process owners regarding the issue.

One school principal said that,

*“...most of the time woreda education office use school EMIS generated information for their own reporting mechanisms than for school development/change...”*

#### 4.2.5 Factors that Hinder Proper Implementation of EMIS

Table 9: Respondents' view on factors that hinder proper implementation of EMIS.

NO	Items	Respondents	X	SD	Overall X	T-value	P-value
1	Shortage of qualified staff	Experts	2.19	1.23	2.09	0.72	0.47
		Process owners	2.00	1.25			
2	Absence of refreshment training for EMIS staff	Experts	1.37	0.44	1.4	-0.5	0.61
		Process owners	1.43	0.50			
3	Less attention given by top level management	Experts	1.81	0.38	1.73	1.64	0.1
		Process owners	1.66	0.47			
4	Low awareness level of EMIS data users	Experts	1.56	0.5	1.58	0.84	0.39
		Process owners	1.61	0.24			
5	Poor office facilities	Experts	1.30	0.46	1.23	1.41	0.16
		Process owners	1.16	0.37			
6	Poor ICT facilities	Experts	1.34	0.48	1.32	0.46	0.64
		Process owners	1.30	0.46			
7	Lack of EMIS guidelines and policies	Experts	2.88	0.98	2.94	-0.61	0.6
		Process owners	3.01	1.11			

X=mean, SD=standard deviation, p-value at  $\alpha=0.05$  and degree of freedom=94

Scales:-

$\leq 1.49 = \text{very challenging}$ ,  $1.5 - 2.49 = \text{challenging}$ ,  $2.5 - 3.49 = \text{slightly challenging}$ ,  $3.5 - 4.49 = \text{rarely challenging}$ ,  $\geq 4.5 = \text{not challenging}$

As shown in item 1 of table 9, respondents were requested to indicate their level of agreement regarding the shortage of qualified staff. Based on their replies, the mean score of experts and process owners ( $X= 2.19$ ,  $SD=1.23$ ) and ( $X=2.00$ ,  $SD=1.25$ ) respectively lies between 1.5 and 2.49. The overall  $X=2.09$  also lies between 1.5 and 2.49. This shows that shortage of qualified staff is a challenge in woreda education offices of Jimma Zone. Thus, it is possible to learn that shortage of qualified staff is one factor that hinders the implementation of EMIS in woreda education offices. The significance level ( $p=0.47$ ) is greater than 0.05, this indicates that there is no significant variance between the responses of experts and process owners regarding this factor.



Concerning item 2 of table 9, respondents were asked to denote whether absence of refreshment training for EMIS staff is one of the factor that hinders proper implementation of EMIS or not. Accordingly, the mean score of experts and process owners ( $X= 1.37$ ,  $SD=0.48$ ) and ( $X=1.43$ ,  $SD=0.5$ ) respectively lies between 1 and 1.49. The overall  $X=1.4$  also lies between 1 and 1.49. This indicates that absence of refreshment training for EMIS staff is very challenging in woreda education offices of Jimma Zone. On the other hand, data gathered from interview and open ended questionnaire revealed that the majority of woreda education offices officials lack proper training on the issue due to lack of adequate budget to prepare training at woreda level. From the above discussion, there is indication that absence of refreshment training for EMIS staff is one of the major factors that hinder proper implementation of EMIS. The significance level ( $p=0.61$ ) is greater than 0.05, this indicates that there is similarity between the opinions of experts and process owners regarding the mentioned training.

In item 3 of table 9, respondents were asked to give their view on whether less attention given by top level management is a factor that hinders proper implementation of EMIS at woreda level or not. On this point, the mean score of experts and process owners ( $X= 1.81$ ,  $SD=0.38$ ) and ( $X=1.66$ ,  $SD=0.47$ ) lies between 1.5 and 2.49. The overall  $X=1.73$  also lies between 1.5 and 2.49. This indicates that less attention given by top level management is challenging proper implementation of EMIS in woreda education offices of Jimma Zone. The significance level ( $p=0.1$ ) is greater than 0.05, this also shows that there is no vital difference between the opinions of experts and process owners regarding this issue.

Regarding item 4 of the same table, respondents were asked to state whether low awareness level of EMIS data users is a factor that hinders proper implementation of EMIS at woreda level or not. The mean score of experts and process owners ( $X= 1.56$ ,  $SD=0.5$ ) and ( $X=1.61$ ,  $SD=0.5$ ) lies between 1.5 and 2.49. The overall  $X=1.58$  lies between 1.5 and 2.49 too. Similarly, data gathered from interview and open ended questionnaire revealed that majority of EMIS data users lack skills to process the data scientifically. This indicates that low awareness level of EMIS data users is a challenge that hinders scientific implementation of EMIS at woreda level.

The significance level ( $p=0.39$ ) is greater than 0.05, this indicates that the responses of experts and process owners are similar on this issue.

Concerning item 5 of table 9, respondents were requested to tell whether poor office facilities is a factor that hinders proper implementation of EMIS at woreda level or not. As an outcome of this, the mean score of experts and process owners ( $X= 1.30$ ,  $SD=0.46$ ) and ( $X=1.16$ ,  $SD=0.37$ ) lies between 1 and 1.49. The overall  $X=1.41$  also lies between 1 and 1.49. Same wise, data gathered from interviewees and open ended questionnaire revealed that majority of woreda education offices are in short of due facilities. This indicates that poor office facilities are factors that pull back proper implementation of EMIS at woreda level. The significance level ( $p=0.16$ ) is greater than 0.05, here, we can't see significance difference between the opinions of experts and process owners regarding the stated opinion.

Regarding item 6 of table 9, respondents were asked to indicate their feelings on whether poor ICT facilities are factors that hinder proper implementation of EMIS at woreda level or not. On this, the mean score of experts and process owners ( $X= 1.34$ ,  $SD=0.48$ ) and ( $X=1.30$ ,  $SD=0.46$ ) lies between 1 and 1.49. The overall  $X=1.32$  also lies between 1 and 1.49. Similarly, data gathered from the interview and open ended questionnaire denotes that the majority of woreda education offices have big deficiency of technological equipment. Thus, they have suggestion that poor ICT facilities are one significant factor that hinders proper implementation of EMIS at woreda level. The significance level ( $p=0.46$ ) is greater than 0.05, this notifies that there is no significant variance in their opinions on this point.

One woreda education office head said,

*“... In our office, the existing computers are not functioning properly...”*

Concerning item 7 of the same table, respondents were requested to indicate whether lack of EMIS guidelines and policies are factors that hinder proper implementation of EMIS at woreda level or not. On this, the mean score of experts and process owners ( $X= 2.88$ ,  $SD=0.98$ ) and ( $X=3.01$ ,  $SD=1.11$ ) lies between 2.5 and 3.49.

The overall  $X=2.94$  lies between 2.5 and 3.49 too. Supporting this, data gathered from the interview and open ended questionnaire shows that majority of woreda education offices are unable to show the mentioned guidelines or policies on how to implement EMIS scientifically.

This indicates that there is little or no attention from top management on providing pertinent guidelines or manual for proper implementation of EMIS at woreda level. The significance level ( $p=0.6$ ) is greater than 0.05, from this, we can see no significant difference between the two opinions.

## CHAPTER FIVE

### 5. SUMMARY, CONCLUSION AND RECOMMENDATION

This final part of the thesis deals with the summary of the findings of the study, the conclusions reached at and the recommendations forwarded on the basis of the findings.

#### 5.1 Summary

The main purpose of this study is to assess the practices and challenges of EMIS in woreda education offices of Jimma Zone and to forward recommendations for the drawbacks identified.

To target the aim, the following research questions were raised:

- How is the importance of EMIS perceived by the managing bodies & experts of zonal & woreda education offices?
- How is EMIS organized and staffed at woreda & zonal level?
- What is the quality of information generated by the EMIS experts of these offices?
- What are the major challenges of EMIS in Jimma Zone Education Offices?

To find answers to these questions, the study is conducted in the selected 5 woreda education offices of Jimma Zone. 30 process owners and 66 experts were selected through census sample techniques from the zone & woredas. From these, 6 are office heads, and 5 secondary school principals were taken purposively in order to check in case there is any variance in the data gathered from woredas; besides, all are important for the study. Data were obtained from the sample respondents through questionnaire & interview and from document analysis. In doing this, the necessary information was gathered mainly through questionnaires filled by experts and process owners. In addition, interview was conducted with five Woreda education offices heads, Zone Education Office head and five secondary school principals (in particular) to enrich the data obtained from the questionnaire.

The aggregated data obtained are analyzed using various statistical tools: percentages, mean, standard deviation, and independent sample t-test. According to the result of the data analysis, the following major findings are identified.

### **5.1.1. Perception of respondents regarding importance of EMIS**

With regard to the importance of EMIS in woreda education offices, the findings in this study envisage that the respondents stated their belief that EMIS is important & improves the quality of decision made in woreda education offices.

- Findings in this study indicate that respondents have opinion that EMIS improves the quality of planning in woreda education offices. Experience of woreda education offices in using EMIS for planning can more or less signify this.
- There is indication that respondents have beliefs that EMIS strengthens links among educational offices, improves overall work accomplishment and thus, should be strengthened.
- This study also shows that respondents expressed their imaginations saying that the majority of woreda education offices lack skill of utilizing the existing resources based on EMIS generated information.
- The result also denotes that EMIS is not properly used to link every woreda education office with secondary schools and other similar & counter offices in the Zone.
- Other point of the findings produces that EMIS is not efficiently managed at offices level to improve the overall operation of the organizations' activities.
- This study , in addition, signifies that all the respondents feel that EMIS helps to accomplish task in relatively shorter time

### **5.1.2. Regarding organization and staffing of EMIS**

- With regard to organization and staffing of EMIS, the findings address that EMIS is not appropriately organized at woreda and school levels.
- Complementary to the above point is that the respondents claim the absence of pertinent chain of command among experts of EMIS sectors, and along with this, they add that there is lack of division of work and shortage of efficient communication throughout EMIS and other work sections in education offices.

- The respondents didn't hide that EMIS activities are, indeed, decentralized to woreda level.
- On the other hand, they comment that there is lack of qualified manpower for EMIS due to unavailability of sustainable training program at woreda education offices.
- They also remark that EMIS section in Jimma Zone woreda education offices are not furnished with adequate physical resources.

### **5.1.3. Regarding opinions of respondents about quality of information generated by EMIS in woreda education offices**

- With regard to quality of information generated by EMIS, the findings of the study notify that EMIS generated information lacks relevance; this, as added from their response to interview, realizes that there is a problem in processing information beginning from schools up to the zone.
- The respondents expressed their imaginations that EMIS generated information is up to date /timely. From this, it is understandable that they are referring to the time when the information reaches them.
- The other point from the study denotes that EMIS generated information are not consistent.
- In addition, it is revealed that EMIS generated information are not easily accessible to all concerned bodies and consumers.
- It is also found that EMIS generated information lacks reliability

### **5.1.4. Regarding utilization of EMIS**

- With regard to utilization of EMIS, the finding of the study revealed that, though the practice is there, the woreda education offices utilization of EMIS generated information for financial and human resource planning as well as for record keeping is limited. The result of interview & document analysis show that the extent to which they use it doesn't go very much than numerical data & some status of resources.

- Similarly, there is an indication in the study that the inefficiency in applying EMIS for resource management, work evaluation & monitoring is caused by the short of adequate knowledge about the proper implementation of the system.,

#### 5.1.5. Regarding challenges of EMIS

- The findings of this study state the major challenges for the adoption and implementation of EMIS at woreda education offices of Jimma Zone as follow. Absence of refreshment training for EMIS staff, shortage of qualified professionals, less attention given by top level management, low level of awareness of EMIS data users, poor office and ICT facilities, lack of internet access & network and shortage of adequate fund are addressed as considerable hindrances of pertinent implementation of the EMIS.

## 5.2 conclusions

- It is obvious that utilizing and managing the existing resources in education sectors based on EMIS generated information helps to: realize the achievement of quality education, ensure practicability of management made decisions, arrange for online communication network, evaluate and monitor the present status of the education management activities and devise mechanisms for future development. According to *Chapman (1990:5)*, educational information could be used to improve the quality of education by providing data that are used directly to secure allocated recourses, constraining bad decisions and detecting inefficient use of resources.

However, the findings of this study display that there is lack of skill in utilizing the existing resources based on EMIS generated information in woreda education offices of Jimma Zone. Absence of chained structure & allotted budget for the system are learned as other core challenges for the actualization of the system. From these, we can generalize that the practice and implementation of EMIS is not profoundly organized & utilized so as to improve quality of education in woreda education offices of Jimma Zone. Therefore, it can be imagined that the practices and efforts made by woreda education offices to develop educational activities & to achieve intended goals could be hampered unless EMIS is actualized.

In fact, this doesn't mean that all works of these offices are doomed. There are a number of activities adequately exercised in woreda education offices of Jimma Zone that could be appreciated as opportunity for successful implementation of the EMIS.

For instance, what has been done in mobilizing the society to build schools, accessing education to all citizens and boosting female participation in education are worth mentioning.

- It is supposed that EMIS should be well organized at woreda and school level, it is also imperative that a well-organized Education Management Information System that is capable of providing relevant, accurate, and timely information to each of these groups is a top priority and area of concern to any education management system, *Windham, et. al.* (1990:83-84). However, the finding of this study emphasizes that the system is not appropriately organized at woreda and school levels in Jimma Zone. The most common reasons attributing to the setbacks, as mentioned above, are lack of: attention from top management, pertinent training for staff, qualified experts, IT & office facilities, adequate budget, processing valid data and interconnected structure of EMIS sector. From this, it can be concluded that most implementations & practices of EMIS at woreda and school level cannot be free from: misinterpretation, misuse & personal bias.
- The finding also reveals that there is a gap of communication between EMIS and other sections in/out of the organization. Hence, it can be concluded that woreda education offices of Jimma Zone are in short of processing & utilizing data/information from within and outside. Furthermore, most of the staff of these woreda education offices are not exposed to appropriate awareness or training programs and didn't get chance of self-education with which they could improve their knowledge, skill and performance. This in turn, could contribute to the under development of the organization.
- In order to monitor indicators of success, achievements and retention, it is very important to obtain accurate, timely and clear data from all stakeholders participating in the provision of education. However, the outcome of this study shows that the woreda education offices of Jimma Zone are in short of collecting data from stakeholders, community & other organizations;



even those collected lack relevancy, clarity and reliability. Hence, it can be concluded that EMIS generated information at woreda education offices of Jimma Zone cannot be believed to meet the standard of EMIS.

- Finally, the finding in this study emphasizes that the major challenges for implementing EMIS in these educational organizations are in availability of modern technology and related training for efficient utilization of IT equipment. This is imagined to reduce effective implementation of EMIS and could pose a major threat on the achievement of educational goals.

### **5.3 Recommendations**

On the basis of the findings of the study, the following recommendations are forwarded:

- In all the educational information utilizing hierarchies, structural reorganization of EMIS with qualified and trained personnel should be arranged so as to actualize EMIS incorporated education management at all levels.
- Improving the arrangement & staffing of EMIS at all levels should, therefore, be assumed for improving the quality of education & education management.
- In order to get well-qualified experts, training courses should periodically be arranged for staffs & office workers in the zone, woredas & schools. Because, this can minimize or avoid the deficiency in quality, reliability, validity and timeliness of data collected & processed. The training should be prepared considering various environmental conditions, cultures and socio-economic situations. Its content needs to meet educational goals. In addition to this, it is advisable that, woreda, zone and regional education offices should work hand-in-hand to ensure participation of the community & NGO's. This has to be followed by raising fund for the preparation of long & short-term training courses as well as organization of EMIS & its coordinators in all education offices & schools.
- All stakeholders & education providing community should get necessary awareness about the importance & benefit of EMIS.

- After receiving & analyzing data/information from bottom, providing feedback should be included in the system implementation and exercised by woreda and zone education offices.
- The zone, in collaboration with OEB & WEO has to devise strategy with which to secure budget for EMIS at all levels of education offices and schools.
- At Zone and Woreda level, awareness creation & workshop program on the significance & establishment of EMIS should be arranged & held in order to organize networking system from top to school level.
- Zone and woreda education offices should design & develop attractive and effective project proposals and request participation of concerned education society and NGOs so that they could be initiated to take part in the actual practice & implementation of EMIS at all levels of educational management.

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## APPENDIX A

### QUESTIONNAIRE

**Dear respondents,**

This is a questionnaire prepared to collect data on the organization and implementation of Education Management Information System in Jimma Zone and Five Woreda Education Offices. The research is meant for the fulfillment of MA degree in educational leadership. It is to be reacted to by purposively selected personnel & experts of each core process unit of five woredas. Academician as you are, the researcher trusts you to respond genuinely & faithfully. No individual's name will be included and all personal suggestions, notion or comments shall be kept confidential; and hope that this paper will come back with your intellectual mind.

Please, write due answers in the blank-spaces for personal information and

encircle the numbers of your preference for part two. If there is a change of mind, you can blacken the wrong ones and encircle the rights. Regarding the open ended questions , you can write what you believe about the ideas raised in the spaces provided..

I thank you for your cooperation.

#### **I-Personal information**

- Age \_\_\_\_\_ Sex \_\_\_\_\_ Specific job \_\_\_\_\_
- Educational qualification \_\_\_\_\_
- Specialized in \_\_\_\_\_
- Position in the job (if any) \_\_\_\_\_
- Work experience \_\_\_\_\_years

**2.** Below are statements seeking your opinion about EMIS in your woreda. Indicate you agreement by circling on the number corresponding to your answer

Note: (1. *strongly disagree*, 2. *Disagree*, 3. *Not sure*, 4. *Agree*, 5. *Strongly agree*)

1	EMIS Improves the quality of decision made in my section	1	2	3	4	5
2	EMIS improves the quality of planning in my work section	1	2	3	4	5
3	EMIS enhances efficient utilization of resources in my office	1	2	3	4	5
4	EMIS strengthen the link between schools and woreda education office	1	2	3	4	5
5	EMIS strengthen the link between our woreda and others	1	2	3	4	5
6	EMIS strengthen the link between our woreda and regional Education bureau	1	2	3	4	5
7	EMIS improves the overall operation in my work section	1	2	3	4	5
9	EMIS helps to complete tasks in relatively shorter time	1	2	3	4	5
10	EMIS should be strengthened	1	2	3	4	5

3. Below are statements seeking your opinion about organization and staffing of EMIS in your woreda. Indicate your agreement by circling on the number corresponding to your answer

Note: (1. *strongly disagree*, 2. *Disagree*, 3. *Not sure*, 4. *Agree*, 5. *Strongly agree*)

1	EMIS is appropriately organized at woreda level	1	2	3	4	5
2	EMIS is appropriately organized at school level	1	2	3	4	5
3	There is a clear chain of command for EMIS section	1	2	3	4	5
4	There is an efficient communication between EMIS and other work sections	1	2	3	4	5
5	There is an efficient communication between EMIS offices at different level	1	2	3	4	5
6	There is clear division of work among experts in EMIS section	1	2	3	4	5
7	EMIS activities are sufficiently decentralized to woreda level	1	2	3	4	5
8	EMIS is staffed with experts with relevant training	1	2	3	4	5
9	EMIS is staffed with adequate experts	1	2	3	4	5
10	There is clear job description for EMIS staff	1	2	3	4	5
11	EMIS experts receive continuous training	1	2	3	4	5
12	EMIS is furnished with adequate physical resources (computers and other office furniture)	1	2	3	4	5



4. Below are statements seeking your opinion about quality of data generated by EMIS in your woreda. Indicate your agreement by circling on the number corresponding to your answer

Note: (1. *strongly disagree*, 2. *Disagree*, 3. *Not sure*, 4. *Agree*, 5. *Strongly agree*)

	EMIS generated information are					
1	relevant	1	2	3	4	5
2	up to date /timely	1	2	3	4	5
3	clear	1	2	3	4	5
4	adequate; covers all important areas	1	2	3	4	5
5	easily accessible	1	2	3	4	5
6	reliable	1	2	3	4	5

5. Below are statements seeking your opinion about utilization of EMIS information for various purposes in your woreda. Respond to the statements by circling on the number corresponding to your answer

Note: (1. *strongly disagree*, 2. *Disagree*, 3. *Not sure*, 4. *Agree*, 5. *Strongly agree*)

	My office uses EMIS generated information for					
1	human resource planning	1	2	3	4	5
2	hFinancial planning	1	2	3	4	5
3	Physical resource planning	1	2	3	4	5
4	efficient resource utilization	1	2	3	4	5
6	monitoring of office activities	1	2	3	4	5
6	evaluation of office activities					
7	record keeping	1	2	3	4	5
8	strategic planning	1	2	3	4	5
9	For school development	1	2	3	4	5

If any, please write other possible purposes for which you use EMIS, opinion about importance of EMIS, quality of data generated by EMIS.

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6. Below are statements seeking your opinion about factors that hinder proper implementation of EMIS in your woreda. Respond to the statements by circling on the number corresponding to your answer

**1. Very challenging, 2. Challenging, 3. Slightly challenging, 4. Rarely a challenge, 5. Not a challenge**

1	Shortage of qualified staff	1	2	3	4	5
2	Absence of refreshment training for EMIS staff	1	2	3	4	5
3	Less attention given by top level management	1	2	3	4	5
4	Low awareness level of EMIS data users	1	2	3	4	5
5	Poor office facilities	1	2	3	4	5
6	Poor ICT facilities	1	2	3	4	5
7	Lack of EMIS guidelines and policies	1	2	3	4	5

If any, please list other factors that hinder proper implementation of EMIS in your woreda

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## **APPENDIX B**

### **Interview Questions.**

This interview is meant to collect data for a research to be conducted for the fulfillment of MA degree in educational leadership. The questions are prepared for top management, core process owners, EMIS experts, supervisors & five directors of Jimma zone & five woreda education offices. It is designed to find out how EMIS is organized, the extent to which it is utilized. It also intends to see the attitude of concerned bodies towards the system and challenges that might be encountered in implementing it efficiently. The respondents will be introduced to the purpose of the interview and be informed that all personal suggestions, notions or comments shall be kept confidential. In case there is misunderstanding of concepts, the question will be translated to Afan Oromo/Amharic orally at the spot.

### **Questions**

1. It is said that, "Information is money," have you ever involved in information business?
2. Do you think that EMIS improves the over all work performance of woreda education office and schools under it? If so how? Can you give evidence on how it improved the work performance of your office?
3. Is EMIS properly organized at different level (zone, woreda, schools)? Why do you think so?
4. How do you judge the relevance of information generated by EMIS? Why do you think so?
- 5/ To what extent do you use EMIS generated information in your office?
6. For what major areas do you use EMIS information? Please explain the areas?
7. What do you think are major factors that hamper proper implementation of EMIS in your office?
8. What do you recommend to improve the proper implementation of EMIS in your office?

**I thank you for sharing me your time & thought!**

## **APPENDIX C**

### **Translated version of the interview**

- “Infoormeeshiniin Maallaqa!” jedhama. Takkaa irratti hojjattanii maallaqa argattanii beektu?
- Isinii fi hojjattoonni biiroo keessanii EMIS akkamitti ibsitu?
- EMISn raawwii hojii biiroo barnootaa aanolee fi manneen barnootaa fooyyessuu nidanda’a jettanii yaadduu? Yoo ta’e akkamitti akka fooyyesse biiroo keessan fakkeenya fudhachuun raga kennuu dandeessuu?
- EMISn sadarkaa adda addaatti ( zooniitti, aanoleetti fi manneen barnootaatti) sirnaan qindaa’eraa? Akkamitti jettanii yaaddu?
- Sirrummaa infoormeeshinii EMISn madde akkamitti madaaltu? Maal irraa ka’un kana jettu?
- Infoormeeshinii EMISn maddu biiroo keessanitti hanga ammamiitti fayyadamtu?
- Iddoowwan ijoo infoormeeshinii EMIS irraa madu itti fayyadamtan kam fa’i? tokko tokkoonsaanii ibsaamee?
- Biiroo keessan keessatti gufuuwwan hojiirra oolmaa EMIS danqaa jiran jettanii yaaddan maal fa’i?
- Biiroo keessan keessatti hojimaata EMIS sirnaan qindeessanii hojii irra oolchuun akka danda’amu maaltu ta’u qaba jettu?

**Galatoomaa!**

