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Current Practices and Challenges of Educational Management Information System in Public Education Institutions of Eastern Ethiopia

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Abstract: The purpose of this study was to examine the existing practices and challenges of Education Management Information System in Public Educational Institutions of Eastern Ethiopia. Survey research design that involves both quantitative and qualitative data was employed. Questionnaire and key informant interview were the methods used to collect data. The participants of the study comprised 15 university and college deans, 54 zonal education bureaus (ZEBs), regional education bureaus (REBs) and districts education bureaus (WEBs), 46 teachers, and 10 educational experts (with the total of n =125) were selected via purposive, simple random and stratified sampling techniques. The questionnaire was distributed to a total of 115 participants of the study, and 106 (92.2%) were appropriately filled in and returned. Additionally, 10 educational experts were interviewed. Data were analyzed using descriptive statistics such as frequency, percentage, mean and standard deviation. The obtained results showed that the current practices of educational management information system are below the expected level due to lack of qualified and well-trained professionals in the field. In addition, educational management information system positions in many educational institutions were dominated by those who do not have educational management information system qualifications, and even some educational institutions did not have education management information system experts at all. Thus, this has had a serious impact on collecting quality data, disseminating and managing information in educational institutions due to shortage of qualified personnel in the field of the study.

Keywords: Education management information system; Eastern Ethiopia; Public education institutions

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1. Introduction

In the pursuit of quality education for all, a timely, cost effective, and accurate data is increasingly important for evaluating education policy, determining educational planning, and monitoring the progress towards attainment of development goals (UNESCO, 2014: 45). Accordingly, to assure and measure quality education, Education Management Information System (EMIS) is repository for data collection, processing, analysis and reporting of educational information including schools, students, teachers and staff. Thus, EMIS is a sub-system of an education system, whose aim is to collect, store, and process, analyze and disseminate educational information (Carrizo, Sauvageot, & Bella, 2003). Subsequently, Al Koofi (2007: 6) explained a vital aims of EMIS on education sector as:

> Educational Management Information System is a system for organizing information base in a systemic way for the management of educational development; responsible for collecting, processing, analyzing, publishing, distributing, rendering data and information services for users of educational information.

The distinction between data and information is not very clear. To some people, raw facts, figures, objects, etc. are data (Aldarbesti & Saxena, 2014) and for others processed data is known as information. Collection of data and its conversion to the information, proper storage, and retrieval and effective utilization of information need Management Information System popularly known as (MIS). It is a very strong tool available for managers for planning, organizing, executing, monitoring, controlling and evaluating their operations efficiently. Availability of educational resources makes all the difference to an organization to compete in the market and excel. It is not enough only to arrange resources but their timely acquisition, utilization and monitoring is absolutely essential for the success of the organization. The terminology of resource is very comprehensive which can be categorized as human, material, financial, and information resources (Yero, 2002). The management functions like planning, organizing, executing, monitoring, controlling and evaluation can be performed with the information. EMIS is management information system that equips decision makers and relevant stakeholders with information necessary to improve quality of education.

Education Management Information System is an "organized group of information", a center or a unit that collects, stores, integrates, processes, organizes, analyses, manages and distributes information for educational planning and management (Al Koofi, 2007). EMIS is not only a means to gather statistics from the schools. It also provides comprehensive, integrated, relevant, reliable, unambiguous and timely data to education leaders, decisions makers, planners and managers to perform their responsibilities efficiently to achieve the set goals (Ahmad & Adnan, 2010).

Similarly, as Carrizo *et al*. (2003) stated, the objective of an EMIS, however, is not only to collect, store, and process, analyze, manage and disseminate information, but also to help education policy-making by providing relevant and accessible information. Moreover, Landero and Role (2018) stated that an effective EMIS is required to include administrative and pupils' financial, human resources, and

learning data. In short, all EMIS work is composed of three basic components: people, process, and technology, as is illustrated in Figure 1. In most development works, the combination of the people (leadership, managerial, and technical styles and process (administrative requirements, timelines, job skills, and funding) are frequently the most difficult to align with the goal of EMIS, namely, providing quality education information.

What Education Management Information System requires?

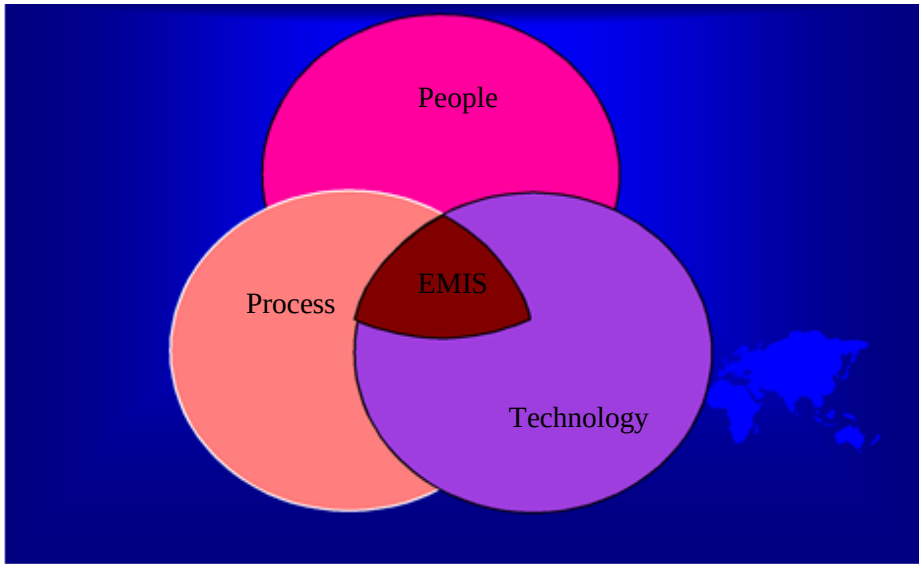

Figure 1: Three Basic Components of EMIS
Source: Bernbaum and Moses (2011: 9)

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

As regard to the current practice of EMIS in global context generally and in Ethiopian context particularly, EMIS provides a comprehensive and ongoing capacity building program for Ministry of Education at multiple levels that ensures the existing staff acquire new skills as new requirements emerge (Ahmad & Adnan, 2010). In order to assess the progress towards policy goals, an effective EMIS is required (Hua & Herstein, 2003). In addition, the same authors stated that 'a comprehensive EMIS is not only including administrative and pupils' data, but also financial, human resources, and learning data. Ahmad and Adnan (2010) stated an emphasis on quality, equality, equity, performance and development requires significant changes to the functioning of education systems, how they are managed, and the kinds of data and information that education leaders and mangers need to fulfill their responsibilities. So EMIS aimed to gather information by using emerging information technology to provide comprehensive, integrated, relevant, reliable,

unambiguous and timely data to education leaders, decisions makers, planners and managers to perform their responsibilities accurately and efficiently. However, as the above study revealed, the reality of current practices of EMIS in global context is not as such satisfactory.

As has been said, current practice of EMIS is not satisfactory globally, and this is particularly true in Ethiopian education system. All too often, EMIS design and development has been limited to information technology enhancements, and/or data storage and maintenance (Hua & Herstein, 2003). To this end, countries around the world have invested significant resources into collecting, processing, and managing more and better data through EMIS (Hua & Nerstein, 2003). Ethiopia has been attempting to satisfy the pressing demand for high and medium level managerial, technical and scientific experts by educational management. Even though encouraging improvements have been made, available human power in educational management is insignificant due to expansion of primary and secondary level schools, and private and public colleges and universities. As stated in Ethiopian education policy document and consecutive education sector development program (ESDP) documents, high emphasis is given to increase the reliability and validity of information from creation to disseminations and usage starting from the lower to the higher level (MoE, 1994 and ESDP V). The Federal Democratic Republic of Ethiopia in its 'Growth and Transformation Plan II' (MoFED, 2015) set a goal for the country to achieve/attain middle-class status. The GTP II as well as Education and Training Policy of the country give due emphasis for quality, equity, efficiency and access to education. The Ethiopian higher education strategy also focuses to make higher education producers of competitive workforce based on the current and far-reaching growing demand.

Pertaining to the challenges of EMIS, Oliver (2017:58) reported that using EMIS in education system helps to maximize students' achievement with limited resources in which it remains one of the greatest educational challenges. EMIS is designed to collect and analyze data on educational system to improve planning, resource allocation, monitoring, policy formulation and decision-making (UNESCO, 2006, p.32). Similarly, as West (2003) described EMIS as "there are no linked information systems for education administration and the capture of administration/ management data in the schools". He further stated that "there is no systematized data collection and supervision system in place that uses EMIS data to monitor schools and staff performance". Likewise, Ellison (2004) stated that EMIS in many developing countries can be described as poor in terms of timeliness and quality of data, slow data dissemination, limited data analysis and use in education policies. He argued that results were disappointing despite donors' substantial investments on EMIS because difficulties were faced by many countries in managing the collection, analysis and production of data as well as attracting and retaining staff with the required technical skills. Similarly, Carrizo *et al*. (2003) argued that EMIS is a sub-system of an education system, whose aim is to collect, store, process, analyze and disseminate information. Further, Wako (2003b), Hua & Nerstein (2003), and Nunamaker & Konsynski (1982) described the objectives of EMIS as it provides

timely, cost effective and user appropriate information to support educational planning and management. Here, all the sources mentioned earlier emphasized about the very importance of EMIS in the education sector. It is also indicated that due to lack of knowledgeable and skillful human power, the education sector is suffering a lot in obtaining quality, timely, reliable and valid data, and eventually the dissemination of information lacks accuracy and clarity. Therefore, in this regard, EMIS plays a great role to fill the gap repeatedly observed in the management and/or administration of the education sector.

In the same way, Ahmad and Adnan (2010) stated that application of EMIS is still poor in various developing countries in terms of collection, analysis and production of data, generating its outputs and dissemination to develop better education policies. The findings of study by Oliver (2017) further indicated that the following are constraining factors of EMIS: infrastructural challenges, unavailability of computers and devices at schools, and low computer literacy amongst staff. This renders the information system expensive to maintain as information is challenging to distribute, and extensive training is required to increase IT-capacity of staff so they can use it efficiently. Furthermore, Oliver (2017) pointed out that there was scarcity of valid, reliable, timely and accurate education information to guide informed decision-making, both at the policy and operational levels. Therefore, educators must understand that efficient information management is an important condition for continued social and economic development. Not using accurate educational information for monitoring development activities and in decision-making may result in unexpected problems and hold back development.

The rapid changes in science and technology, the development of competitive global market, the new moves toward knowledge production, knowledge transfer as well as the desire for economic growth and development have been escalating from time to time. Education, as part of the entire system of any economy, exists at the heart of such vigor and continuous changes which indeed calls for managers in EMIS. However, qualified mangers in education are not sufficient in Ethiopia. Insufficient capacity (qualification, experience and skills) of educational managers in EMIS seem among the major challenges confronted at various levels of the education system (central, regional, zonal, district, school, colleges and universities). The challenges become serious as universities are not training graduates in EMIS on one side and despite the growing demand from the MoE/MoSHE in particular and the government in general. Owing to this, the education system of the country demands better qualified educational managers to fill the gaps at all levels of the education system by EMIS by understanding its role on promoting quality education.

Therefore, the present study was worth investigating owing to the following justifications: first, current study has not been researched so far in Ethiopia generally and Eastern part of the country particularly. Second, Ethiopia's education system has expanded rapidly since after the overthrow of the Derg in 1991. However, despite this expansion in fact, the rapid growth over the past decades has overburdened the system and created a slew of new problems, such as funding shortages and a deterioration of quality. Enormous progress and increasing access to education

notwithstanding, it obvious current Ethiopian education system resembled in a state of crisis and that quantitative achievement in mask stagnation in terms of quality and learning outcomes. Thus, this study aimed to examine the role of EMIS in improving quality of information and data in educational institutions.

Therefore, the general objective of the study was to examine the existing practices and challenges of educational management information system (EMIS) in some selected public educational institutions in Eastern Ethiopia.

The reason for selecting Eastern Ethiopia is due to the attachment that the researchers have formed with universities, colleges or schools which enabled them to clearly articulate the problem. In an attempt to address the above objective, the authors pose the following basic research questions that guided the study:

1. What are the current practices of EMIS in Eastern Ethiopia's public educational institutions?
2. What are the major challenges of EMIS in publication, distribution and dissemination of quality and timely information in Eastern Ethiopia's public educational institutions?
3. What are the roles of EMIS in improving quality information and data in Eastern Ethiopia's public educational institutions?

2. Research Methods

2.1. Research Design

This study used descriptive survey design because it helps to identify and describe the attitude, opinion, behavior or characteristics of the population (Creswell, 2012). This design is suitable to obtain sufficient information on the issue under study from a relatively large number of cases at a particular time so that it enables to address all the research questions. Beyond, it is low-cost and helps to collect self-reported attitude and behavior about any social issue (Vanderstoep & Johnson, 2009). The researchers also used mixed approach, because this method or procedure helps to collect, analyze and mix both quantitative and qualitative data (Creswell, 2012). Creswell (2012) further states that a researcher collects both quantitative and qualitative data, analyzes them, and compares the results to see if the findings confirm or disconfirm each other. The key assumption here is that both qualitative and quantitative data provide different types of information- often detailed views of participants qualitatively and scores on instruments quantitatively - and together they yield results which are detailed.

2.2. Sources of Data

The sources of data for the study were primary and secondary sources. Primary data were collected from college and university deans, district, zonal and regional education officers, principals, vice principals, teachers and those who were assigned as "EMIS Experts in educational institutions". Moreover, secondary data were obtained from documents like journals, reports, and related credentials.

2.3. Instruments of Data Collection

Relevant data for the study were collected using questionnaire and key informant interview which were appropriately designed by authors for getting relevant information regarding the issue being examined. By employing complementary tools, the researchers believeth that it can improve the weakness of one approach with the strength of another.

2.3.1. Questionnaire

To assess current practice and challenge of EMIS in the study area, self-generated questionnaire by researchers were used. Both closed and open-ended questions were used. The items are 5 Point Likert-scales in nature (ranging from 1 to 5), with yes or no questions. The questionnaire was designed in a way that respondents would give their bibliographic information as well as the data which the research questions sought to address. The first part of the questionnaire consisted of five variables that focused on biographical information about respondents. The second part consisted of 24 items revolving around personnel in EMIS, practices and challenges, and importance of EMIS to education sector.

This research mainly used quantitative questionnaire-based survey method or approach because it helped to collect numerical data from 115 deans, ZEB, REB and WEB officers, and teachers.

2.3.2. Key informant interview

So as to substantiate data obtained through questionnaire, key informant interview was made with two school principals, two college deans and two university deans, one ZEB, one REB and two WEB Officers.

2.4. Sampling Techniques and Sample Size

This study was conducted in Eastern Ethiopia in some selected public educational institutions. It mainly focused on three regional states (i.e. Somali, Harari, and Oromia) and one city administrations (i.e. Dire Dawa). Five secondary schools (Medhanialem and Dire Dawa secondary schools from Dire Dawa; Harar and Aboker secondary schools from Harari; Chercher secondary school from west Hararghe-Oromia) were sampled via lottery method. In addition, three universities (Haramaya, Jigjiga and Dire Dawa) were taken by purposive sampling technique. Also, two Teachers' Training Colleges (Chiro and Dr. Abdulimejide College of Teachers Education) were selected through lottery method from amongst four colleges in the study areas. Finally, Haramaya district education office, west Hararghe zonal education office and Somali regional education bureau were selected by employing lottery method from the selected study areas.

Purposive sampling technique was used to determine groups of study such as deans, principals and administrative officials from universities, colleges, schools, regional, zonal and district education offices (those who were assigned as "EMIS Experts") respectively since they were important to pertinent data (Gay, Geoffrey & Airasian, 2012). Since they were the right persons by virtue of their professional roles

and powers they possess leadership position to address the issue of current practice and colleges of EMIS in educational institutions. Thus, all 50% (79) deans, principals, administrative officials, and EMIS experts were taken purposively (Best & Kahn, 2006).

Secondly, stratified sampling technique was employed on each group containing subjects with similar characteristics and in order to obtain a sample of representatives of the whole population in terms of educational level, field of study, current work position, and work experience. Finally, the researchers selected 50% (79) participants (Cohen, Manion & Morrison, 2007: 104).

Thirdly, in this study, simple random sampling technique was used to select teachers. From the target population of 125 teachers in five secondary schools, 37% (46) of teachers were selected by this technique (Cohen *et al*., 2007: 104). This technique enables to select randomly the required number of sample teachers by giving equal chances from a list of a sampling frame.

In short, 15 academic deans were selected from the three aforementioned universities and two colleges, 54 experts were selected from ZEB, REB and WEB Officers, 46 teachers were sampled from schools. Totally, 125 respondents were purposively, stratified and randomly sampled i.e., 115 respondents sampled to fill questionnaire and 10 educational experts for key informant interview.

2.5. Pilot Study

To increase the reliability, validity and practicability of the questionnaire, a pilot has several purposes (Oppenheim, Morrison, Wilson & McLean, 2013; cited in Cohen *et al*., 2007). To check the validity of the instrument, area expertise were consulted and their comments were incorporated and finally the instruments were converted to local languages such Afaan Oromoo, Amharic and Somali to reduce possible language barriers. Moreover, English was used to interview deans in universities & colleges due to the assumption that they can speak and understand the language very well. Before dispatching the questionnaire, a pilot test was conducted in model School of Haramaya University and Bate primary and secondary school of Haramaya town with 30 education experts and the internal consistency of the items was checked. The result of the pilot test showed that the reliability computed by Cronbach alpha was 0.93 which is an acceptable range (Vanderstoep & Johnson, 2009).

2.6. Procedures of Data Collection

To obtain the quantitative data, the researchers contacted the selected sample respondents in person and through the office heads and secretaries of the work unit of the respondents. Hence, the questionnaire was distributed to a total of 115 participants of the study. Finally, out of the total number of questionnaire distributed to the respondents, 106 (92.2%) were appropriately filled and returned.

To gather qualitative data and to substantiate the quantitative one, semi-structured interviews were conducted with 10 key education officials. Before the interview started, some ethical issues were cleared out. All the purposively selected participants

were contacted in person and got informed about the research topic, assured them their participation absolutely free, and its implication succinctly.

2.7. Methods of Data Analysis

First of all, the collected data were checked through data checking and cleaning of the filled questionnaire to identify valid responses and to remove the invalid ones. After doing so, the data were filled in the Statistical Package for the Social Sciences (SPSS version 20). Then, the data collected through questionnaire were analyzed quantitatively using descriptive statistics such as frequency, percentage, mean, and standard deviation.

Moreover, for analysis of qualitative data collected from documents and through key informant interviews, the researchers used combination of content and narration methods of data analysis. Besides, thematic analysis was used in the interview data of the qualitative method. Accordingly, for the thematic analysis, the data were understood by repeatedly reading into the transcript.

2.8. Ethical Considerations

The researchers gave particular consideration to ethical principles to ensuring and informing consent and developing confidentiality, maintaining anonymity and other related ethical issues. Cohen *et al.* (2007: 104) have stated "in research full attention should be given for moral and ethical issues." To give due emphasis on ethical consideration, attention has been given for the following issues. First, before proceeding with data collection and analysis, approval was sought from the University Research Vice-President for Research Affairs. Second, permission was obtained from the study institutions. Last, participants were informed about the nature and procedures of the study and that their participation is voluntary and they had the right to withdraw from the study at any time. Thus, to collect data, ethical issues like voluntary participation, informed consent, risk of harm, confidentiality and anonymity were taken into consideration and assured.

3. Results and Discussion

3.1. Demographic Characteristics of the Respondents

The respondents were asked to indicate their background information. Responses regarding their sex, educational level, field of study, current work position, and work experience were summarized below in Table 1.

Table 1. Background information of the respondents

No.	Variables	Category	Frequency	Percentage
1.	Sex	Female	31	29.2
		Male	75	70.8
		Total	106	100
2.	Educational level	Diploma	13	12.3
		Bachelor degree	59	55.7
		Master's degree	34	32.1
		PhD	-	-
		Others	-	-
		Total	106	100
3.	Field of study	EdPM	31	29.2
		Others	75	70.8
		Total	106	100
4.	Current work position	EMIS expert	3	2.8
		Educational organization leaders and teachers	70	66
		Other educational experts	33	31.1
		Total	106	100
5.	Work experience in years	1-5 years	22	20.8
		6-10 years	26	24.5
		11-15 years	28	26.4
		16-20 years	18	17
		Above 20 years	12	11.3
		Total	106	100

As indicated in Table 1, the majority of respondents, i.e., 75 (70.8%) are males, whereas 31 (29.2%) of them are females. This indicates that personnel in education sector is mainly male dominated, and the participation of females is low. This clearly indicated that education institutions are mainly managed by male experts and the institutions ought to ensure gender equality.

With regard to educational level as indicated in Table 1, many of the respondents are bachelor degree holders (55.7%) followed by master's degree and diploma holders. From this, one may conclude that the majority of the respondents do not have gaps in the level of education, but the problem is these respondents do not have appropriate fields of study that enable them to hold EMIS position in their respective organizations as depicted in item three of the above Table.

As shown in Table 1, many of the respondents 75 (70.8%) have specializations in other fields of study, while only 31 (29.2%) of them are qualified in educational planning and management (EdPM). This implies that let alone having appropriate personnel in EMIS, there are even lack of EMIS personnel in related fields of study. Hence, this indicates that it is compulsory to produce EMIS professionals provided that there is a need to have quality data in education.

Regarding the respondents' current work position, most of them, i.e., 70 (66%), are educational organization leaders followed by other educational experts 33 (31.1%), and only 3 (2.8%) of them are EMIS experts. This indicates that there are almost no people that suit EMIS expertise and one may also conclude that there is scarcity of skilled human power in the field.

Moreover, concerning the respondents' work experience, the majority, 28 (26.4%) of them are in between 11-15 years of work experience. The remaining respondents, i.e., 26 (24.5%) and 22 (20.8%) are in between 1-10. Even though the respondents have had more work experience than their positions demanded, they are not professionals in the area of EMIS.

3.2. Status of Education Management Information System

As indicated in Table 2, the respondents were asked about current practices and challenges of EMIS (Part I) and they were requested to select either "Yes" or "No" alternatives. Under this Table, the analysis focused on the current practices of EMIS in which its items are designed in yes/no answer type.

Table 2. Current practices and challenges of EMIS (Part I)

No.	Items	Responses			
		Yes		No	
		F	%	F	%
1.	Are there EMIS graduate professionals in your organization?	-	-	106	100
2.	Is there any EMIS training given by the organization?	42	39.6	64	60.4
3.	Do you believe that trained professionals in EMIS are enough for your organization to manage the complicated jobs of EMIS?	19	17.9	87	82.1
4.	Does your organization keep records of what is happening based on the list of EMIS guideline?	51	48.1	55	51.9
5.	Do you believe that non EMIS graduates are able to produce timely, reliable and accurate information for national education planning?	41	38.7	65	61.3

As it is evidenced in Table 2 item one, the whole respondents (100%) proved that there are no qualified personnel in EMIS in their respective organizations. To substantiate this item, the data were also gathered through key informant interview.

Hence, the data obtained via interview substantiated this view. One of the respondents from Jigjiga Education Office confirmed:

> There is no any graduate in this field and there is no EMIS department in our office as well. Graduates in other fields will be recruited for handling information though their performance is not satisfactory as they are far from the field and lack the necessary competence in information system. The other problem is that such employees are only temporary as they leave for the jobs in their own field. This will result in additional cost on our office. So professionals in the field are highly demanded to improve the practices (Interviewee #1).

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

The second issue in Table 2 was whether training was given by their respective organization or not. So 60.4% of the respondents witnessed that there was no any sort of training given before and 39.6% of the respondents proved that they received training. Therefore, this implies that EMIS units in organizations are led by those who lack the knowledge of EMIS.

Concerning item 3 in Table 2, respondents were asked whether trained professionals in EMIS are sufficient enough for their organization to manage the complicated jobs of EMIS. Hence, 82.1% of the respondents replied 'no'. This implies that in order to handle the complicated jobs of EMIS, it is very crucial to produce competent graduates in this field of study.

As shown in item 4, 51.9% of the respondents confirmed that events in their organization are not recorded as per EMIS guideline. So if such kind of problems occurs repeatedly, educational organizations are not in a position to find out accurate educational data.

In the last item of Table 2, respondents were asked whether graduates other than EMIS are able to produce timely, reliable and accurate information for national education planning. However, the majority 65 (61.3%) have confirmed that graduates other than EMIS could not handle this issue in a well-defined manner except EMIS graduates who are able to handle this issue in a well-defined manner. Al Koofi (2007) strengthens specialization/expertise in EMIS for EMIS provides comprehensive, integrated, relevant, reliable, unambiguous and timely data to education leaders, decisions makers, planners and managers to perform their responsibilities efficiently to achieve the set goals. Thus, having EMIS professionals and expert maximizes quality to produce timely, reliable and accurate information for national education planning.

Table 3. Current practices and challenges of EMIS (Part II)

No.	Item	Category	Responses	
			Frequency	%
1.	Who is currently responsible in the practices of EMIS in your organization?	EMIS experts	14	13.2
		Other responsible bodies	92	86.8
2.	What kind of training is given by the organization?	Short-term	60	56.6
		Long-term	46	43.4
3.	From your experience, in which field of study graduates hold the position in a process of educational data collection, processing, analyzing, publication, distribution, rendering information for several users?	EMIS	-	-
		ICT	62	58.5
		Education fields of study	44	41.5
4.	What problems do the EMIS experts faced in collecting, organizing, analyzing, interpreting and reporting education sector data?	Knowledge and skill gap	64	60.4
		Lack of trust	30	28.3
		Error in report	12	11.3
5.	How do you rate the level of your organization's educational data collection quality?	Very high	14	13.2
		High	13	12.3
		Medium	61	57.5
		Low	18	17.0
		Very low	-	-

As indicated in Table 3, item 1, 86.8% of the respondents said that the practices of EMIS in organizations are carried out by other personnel that do not have the qualification in EMIS. The interviewees also expressed about the current performance of EMIS in their organizations. They proved that since EMIS was not an independent unit in their organization, the services and functions of the unit were not as such effective and efficient. From this, one can infer that in order to produce quality, timely and reliable data, its practices should be carried out and supported by EMIS professionals.

As it is evidenced in item 2 in Table 3, respondents were asked the kind of training given in their respective organizations. Hence, 60 (56.6%) of them replied that they received short-term training and 46 (43.4%) respondents replied they had long-term training. From this, it can be concluded that, primarily though there were some trainings given, they were not sufficient. To tackle training related problems from individual experts of EMIS, Assela (2012) suggested that there should be regular training programs to ensure that EMIS staff is well equipped with the knowledge and

skills that are necessary to improve their expertise/ability and increase confidence in performing their duties.

In Table 3, item 3, the data depicts that most of the time EMIS experts in organizations are ICT graduates, i.e., 62 (58.5%) and followed by graduates from fields of education 44 (41.5%). This implies that the positions of EMIS in the organizations are not held by the right personnel.

Item 4 of Table 3 depicts challenges EMIS experts faced in collecting, organizing, analyzing, interpreting, and reporting education sector data. Hence, 64 (60.4%) respondents responded that EMIS experts show knowledge and skill gaps, 30 (28.3%) replied they do not place trust in their EMIS experts, and 12 (11.3%) said EMIS experts commit error in reporting. This shows that EMIS experts encountered these difficulties due to knowledge and skill gaps. Hence, it is very crucial to produce graduates in this field of study to improve the practices. To substantiate the findings on the challenges of EMIS experts with a previous study, Ahmad and Adnan (2010) stated that shortage of staff along with weak capabilities in technical and analytical skills is the main issue in many of the districts on education sectors. On the other hand, Assela (2012) revealed that major problems that EMIS experts currently facing are poor storage and management of data, a limited resource settings. Thus, schools and districts get difficulties to either retrieve or update data and information in their local databanks.

In the last item of Table 3, respondents were asked to rate the quality of data collection in their organizations. As a result, the majority of respondents, i.e., 61 (57.5%) rated it as medium followed by low, 18 (17%). The rest of the respondents, i.e., 14 (13.2%) and 13 (12.3%) rated very high and high respectively. From this, one may infer that the quality of educational data collection is of medium status followed by lower quality may be due to the absence of qualified EMIS graduates. So this highly dictates that higher institutions in Eastern Ethiopia are supposed to produce graduates in this field of study.

3.3. Qualified Personnel in Education Management Information System

As indicated in Table 4 below, the respondents were asked about their viewpoints on the availability of required professionals in EMIS and they were requested to select either “Yes” or “No” alternatives on their perspectives.

Table 4. Availability of required professionals on current practices of EMIS

No.	Item	Responses			
		Yes		No	
		F	%	F	%
1.	Are there sufficient qualified EMIS experts who possess the required skill and knowledge in managing information?	19	17.9	87	82.1
2.	Do you think that effective EMIS management and innovative leadership provide an adequate support system in your organization?	83	78.3	23	21.7

As indicated in Table 4 item 1, 82.1% of the respondents have confirmed that there is lack of qualified EMIS experts who possess the required skills and knowledge in managing information. This implies the gaps may occur due to the unavailability of the right professionals who are well qualified in EMIS. This is supported by the findings of Assela (2012) which indicated that assigning personnel who have low skills and knowledge about statistics and education for EMIS position might contribute to increase errors in the data they submit to the EMIS unit.

As depicted in item 2 of Table 4, many of the respondents, i.e., 83 (78.3%), acknowledged that effective management of information and innovative leadership provide an adequate support system in their respective organizations. This indicates that the importance of EMIS is undeniable provided that there is effective EMIS management. However, the finding of research by Assela (2012), which was conducted in Tanzania, revealed that the management officials were not precisely confident with quality of EMIS data and are doubtful about quality of EMIS data, i.e., on its accuracy, validity, reliability and timeliness. Crouch, Enache, and Supanc (2001) stated staff members' reasons for resistance to implementation of EMIS: It creates extra work; it increases accountability, transparency limits patronage, and political sensitivity may arise over unfavorable outcomes.

3.4. Importance of Education Management Information System

Table 5. Mean scores of the importance of EMIS as related to its practices

No.	Importance of EMIS	Mean	Standard deviation (SD)
1.	Making educational data easily accessible and improving the quality of educational data	3.60	.927
2.	Reducing the percentage of errors presently occur in collecting and analyzing data	3.68	.973
3.	Receiving timely data and generating new evidence in support of rational decision making in different areas	4.76	.907
4.	Improving personal efficiency and organizational control	3.80	.863
5.	Speeding up the progress of problem solving in an organization	4.20	1.023
6.	Improving the school records management system and bringing it to up to date	3.70	.873
7.	Enhancing planning, programming, monitoring, evaluation, review, and research for the overall management and decision making of educational development	3.56	.968
8.	Improving capacities in data processing, storage, analysis, report generation and educational data dissemination	4.30	1.123
9.	Allocating resources efficiently and effectively	4.11	.806
10.	Clear flow of information within and across the education system	4.50	1.032
11.	Reinforcing transparency and accountability within the education system	3.89	1.089
12.	Minimizing laborious (manual) and paper work in the education system	3.77	.851

Scales: ≤ 1.49 = Strongly Disagree, 1.5–2.49 =Disagree, 2.5–3.49 = Undecided, 3.5–4.49 = Agree, ≥ 4.5 = Strongly Agree

As shown in Table 5, item 1, the respondents (with mean value=3.60, SD=.927) have agreed about the importance of EMIS in making educational data easily accessible and improving the quality of educational data. This result replicated with the findings of (Aldarbesti & Saxena, 2014), EMIS improves the quality of information and provides relevant information at the right time and place. This implies that respondents have understood its importance though the practice in the organizations remains low. This may have happened due to lack of qualified personnel in the field of study. With regard to item 2, respondents (with mean value=3.68, SD=.973) agreed that EMIS reduces the percentage of errors occurring while collecting and analyzing data. As the data obtained from the interviews also indicated, respondents do not hesitate about the importance of EMIS in this regard, but they have emphasized that the practice of EMIS in the organizations still remains poor unless higher education institutions train competent graduates in this field of study. As indicated in item 3, the respondents (with mean value=3.50, SD=.907) agreed that it enables to receive timely data and generate new evidence in support of rational decision making in different areas. To substantiate this, the question "What is the importance of EMIS for your organization?' was put forward to one of the interviewees" (Interviewee #3) and she replied "EMIS provides timely report on overall work activities and reduces workload of other educational experts."

Similarly, Crouch *et al*. (2001) stated that EMIS systems tend to have the greatest impact on planning and policy support – at that stage policymakers have the greatest latitude to act in response to new information. It would also minimize the role confusion with other graduates as appropriate professionals will handle the matter.

The same question was put to the other interviewee (Interviewee #4) and she replied as follows:

> EMIS has a great role in facilitating work activities in organizations and improving decision making and performance. Information handling is one of the major problems in Eastern Ethiopia. For instance, people who work as information managers are those who have not been trained in the field and they do not understand how educational information is managed. Therefore, producing competent graduates in the area of EMIS is of a paramount importance.

From this, one can conclude that there is no doubt about the importance of EMIS. Likewise, Aldarbesti & Saxena (2014) mentioned that EMIS plays an important role in developing appropriate plans, strategies and policies for improving the education system. Item 4, in Table 5 (with the mean score of 3.80) shows that the respondents believe EMIS improves personal efficiency and organizational control. Because it is believed that if organizations receive timely and accurate data, EMIS improves organizations' efficiency and control. But to do so, organizations still do not have competent graduates in EMIS.

Regarding speeding up the progress of problem solving in an organization (as indicated in Table 5, item 5), respondents (with mean value=4.20, SD=1.023) agreed that it plays important role.

As shown in item 6 in the same table, respondents (with mean value=3.70, SD=.873) agreed that it improves school records management system and makes it up to date. However, there is no improved practice of EMIS in institutions due to lack of

EMIS professionals. Hence, if it is believed that it plays such a paramount role, it dictates to produce human resources in EMIS.

Related to item 7 of Table 5, respondents (with the mean score of 3.56 and SD=98) believe that EMIS plays great role in enhancing planning, programming, monitoring, evaluation, review, and research for the overall management and decision making of educational development. Similarly, according to Assela (2012), well-functioning EMIS can ensure achievement of national goals to provide quality education, which is the basis for facilitating economic growth and sustainable development. The government also needs quality data and information in order to enhance monitoring and evaluation of the education sectors' performance and ensure the right direction for achieving the intended goals and objectives. In line with the above issue, one of the interviewees (Interviewee #5) added:

> Enhancing planning, implementing, decision making, monitoring and evaluating of the education of the education system are the agenda of education, and it helps in determining the seriousness of education problems so that it creates an opportunity for implementers to solve problems in accordance with the sequence of its seriousness. In order to come up with such kind of decision, policy makers need to have accurate, reliable and timely data. However, this is not what is happening in Eastern Ethiopia right these days. The reason for this is due to the absence of appropriate professionals who have the knowledge and skills of EMIS.

As indicated in item 8, in Table 5, respondents were asked to rate the level of EMIS in improving data processing capacities, storage, analysis, report generation and educational data dissemination. Hence, the respondents strongly agreed applying EMIS in educational institutions can improve data processing capacities, storage, analysis, report generation and educational data dissemination in an uppermost level (mean=4.30, SD=1.123)

In item 9, in Table 5, it was raised about the issue of efficient and effective allocation of resources. So the mean=4.11 and SD=.806 indicate the respondents were highly agreed on EMIS helps efficient and effective allocation of resources. In this regard, Interviewee # 6 also confirmed as follows:

> We believe accurate, reliable and timely information through EMIS unit in our organization plays vital role in allocating budget for activities. Hence, this unit is very helpful in allocating resources efficiently and effectively. But, since we do not have qualified EMIS professionals, this is not the case in our organization.

This implies that it is of paramount importance to produce EMIS professionals to overcome the poor practices of EMIS.

As shown in Table 5, item 10, respondents (with mean value=4.50, SD=1.032) strongly agreed that EMIS is important for clear flow of information within and across the education system. Though respondents understood about the importance of EMIS, its practice remains low. So this dictates that producing EMIS professionals overcomes the current malpractices of EMIS.

As indicated in item 11, Table 5, respondents (with mean value=3.89, SD=1.089) agreed about the importance of EMIS in reinforcing transparency and accountability within the education system. This implies that if educational institutions would have

EMIS professionals, this promotes the organization more transparent and accountable for the clients.

Regarding the final item in Table 5, respondents (with mean value=3.77, SD=.851) agreed about EMIS in helping to minimize laborious and paper work in the education system. This implies that many of the respondents do not hesitate about the very importance of EMIS, but they have the same opinion that the practices of EMIS are so poor because of lack of qualified professionals. From this, one can conclude that producing competent graduates in EMIS plays a paramount role in solving this kind of problems.

Table 6. Summary of expected and obtained mean on Table 5's 12 items about the importance of EMIS

Variable	Expected mean	Obtained mean	SD
Perceived importance of EMIS	30	44	3.45

Table 6 indicated summary of 12 items which participants were asked about the importance of EMIS, and then the results were summarized and presented as follows. As can be evidenced in Table 6, participants of the study have positive attitude about the importance of EMIS with expected mean of 30 and obtained mean of 44 and SD= 3.45.

In brief, the practice of EMIS in Eastern Ethiopian context is under the normal level due to absence of qualified personnel in the field. As well, EMIS positions in many educational institutions were held by those who do not have EMIS qualifications, and even some educational institutions do not have EMIS experts at all. Unlikely, Aldarbesti and Saxena (2014: 40) stated that "EMIS is repository and key for data collection, processing, analyzing and reporting of educational information". Pertaining to the challenges of EMIS, educational institutions don't have sufficient qualified employees in the field, and due to this there are gaps on collecting quality data, disseminating, and managing information in education sectors. Oliver (2017: 58) explained about the importance of quality data and information as "a kinds of data and information that educational leaders and mangers are used, and the way they managed it can highly dictates and influences education institutions' advancement". EMIS is an indispensable tool and support for the formulation of policies, management and evaluation in the education system (Assela, 2012). Likewise, Landero and Role (2018: 453) stated that EMIS helps policy makers manage an education system to produce quality outputs.

No one has denied Ethiopia's education system has been expanding quickly since 1991 though a question mark hangs over the issue of quality. Thus, the role of EMIS in improving quality of educational information and data by disseminating and managing information in educational institutions is very crucial to assure quality. According to Al Koofi (2007: 68), amongst diverse strategies available to assure quality education is installing strong EMIS net to all education system.

4. Conclusions and Recommendations

4.1. Conclusions

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

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

This study revealed that respondents were in greater demands of EMIS professionals in their respective organizations though there is no skilled human power in the field.

The role of EMIS in an organization can be compared to the role of the heart in a body. In the body, the heart plays the role of supplying pure blood to all the elements of the body including the brain. The heart work faster and supplies more blood when needed. Heart regulates and controls the incoming impure blood, processes and sends it to the destination in the quantity needed. Heart fulfills the needs of blood supply to human body in normal course and also in crisis. EMIS plays exactly the same role in the education sector. The system ensures that an appropriate data is collected from the various sources, processed and sent further to all the destinations in need of it. The system is expected to fulfill the information needs of an individual, a group of individuals, the management functionaries, and infrastructure in many important ways to the quality and availability of information.

4.2. Recommendations

MoE/MoSHE, regional education bureaus, universities and colleges may plan and launch EMIS programs at various levels to produce sufficient human power that could handle, disseminate and use data in every sector of education in focus and in other related sectors as well. This implies that it is the right time for higher education institutions in eastern Ethiopia to design curriculum and address the greater demands of educational institutions by producing human power in this field of study to fill the gaps related to the problem of educational management information system

It is important to realize that continuous training is one of the mechanisms to develop basic skills in the area. Hence, it would be better if MoE/MoSHE, in collaboration with other educational institutions, design trainings strengthening EMIS in view of new technology that is changing our environment.

The development of EMIS involves nurturing a new management culture more than establishing a data and information system. The process of data collection, integration, analysis, and dissemination is important, but even more critically; it is the

culture of data sharing, information use, and organizational management that leads to the effectiveness of EMIS development.

Last but not least, it is important to remember that EMIS development is not IT (Information technology) development. No one wants just "policy talk." Policy must be supported by evidence or analysis of the evidence. EMIS is developed to provide that evidence. EMIS and other management functions such as monitoring and evaluation, policy research and analysis, and budgeting and planning together should provide the results of the analyses of that evidence. Thus, it suggested Ethiopian education sector out to apply EMIS to manage and store education data base. Without doubt, these support MoE's/MoSHE's needs and satisfy wants of policy makers by providing timely and quality education data and information.

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