

Hawassa University
Institute of Technology
Faculty of Informatics
Department of Information Technology



Title

Implementation Challenge of School Management Information System
(SMIS): (the Case of Alem-Gebeya Town Public Secondary School)

Thesis submitted to the Department of Information Technology in
partial fulfillment of MSc, in Information Technology

Submitted by: WABELA KEMAL

Advisor: ABDELLA KEMAL,(Asst. Prof)

Date: October 17, 2024

Hawassa, Ethiopia

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Hawassa, Ethiopia (2024)

DEDICATED TO:

1. MY FATHER KEMAL YSIHAK LAMMBURO AND
My MOTHER BADRIA JUHAR HUSSEN
2. MY CHILDREN:
MAGFIRA WABELA KEMAL
AMETAREHMAN WABELA
TEHREM WABELA KEMAL

Declaration

I, the undersigned WABELA KEMAL declare that this thesis report entitled “Implementation Challenge of School Management Information System (SMIS): the Case of Alem-Gebeya Town Public Secondary School”, is my original work, has not been presented for a degree in this or other university and all sources of materials used or the thesis work have been duly acknowledged.


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I, ABDELLA KEMAL (Asst. Prof) confirm that this thesis has submitted for examination with my approval as the thesis advisor.

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SCHOOL OF GRADUATE STUDIES

HAWASSA UNIVERSITY EXAMINERS' APPROVAL SHEET

(Submission Sheet-2)

We, the undersigned, members of the Board of Examiners of the final MSc open defense by WABELA KEMAL YSIHAK, we have read and evaluated his thesis entitled "implementation challenge of School Management Information System (SMIS): the case of Alem-Gebeya town public secondary school", and examined the candidate. This is, therefore, to certify that the thesis has acceptable in partial fulfillment of the requirements for the Master's of Science (MSc) degree in Information Technology.

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Final approval and acceptance of the thesis is contingent upon the submission of the final copy of the thesis to the School of Graduate Studies (SGS) through the Department/School Graduate Committee (DGC/SGC) of the candidate's department.

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By
WABELA KEMAL

October 2024
Hawassa, Ethiopia

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List of Abbreviations and acronyms

AGPO	stands for	Alem-Gebeya Plan Office
UTAUTM	stands for	Unified theory of acceptance and use of technology model.
EEDR	stands for	Ethiopian Education Development Roadmap
EECSP	stands for	Emergency in Education Cluster Strategy plan
ESDP	stands for	Educational Sector Development Program
EMIS	stands for	Education Management Information System
EWTP	stands for	Electronic World Trade Platform
ICT	stands for	Information Communication Technology
IT	stands for	Information Technology
IS,	stands for	Information System
IBM	stands for	International Business Machine
MIS	stands for	Management Information System
MoE	stands for	Ministry of Education
NGO	stands for	Non-Governmental Organization
PC	stands for	Personal Computer
SABER	stands for	Systems Approach for Better Education Results
SMIS	stands for	School Management Information System
SPSS	stands for	Statistical Package for Social Science
SWOT	stands for	Strength Weakness Opportunity treat
UFE	stands for	Utilization Focused Evaluation
UNESCO	stands for	United Nations Education Science and Culture Organization
UNICEF	stands for	United Nations International Children’s Emergency Fund

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Abstract

The study helps to investigate the factors that contributed to the implementation challenge of the School Management Information System (SMIS) technology in the case of Alem-Gebeya Town Public Secondary school. The produced & distributed the equipment of the innovative School Management Information Systems' (SMIS) technological tool has been in-placed at the Alem-Gebeya Town Public Secondary school, however it has disserved in the peripheral area, and due to this automating school's daily activities have been a difficulty problem in the peripheral area. The theoretical parts of the study aimed at gaining information about Personal, Internal, and External related socio-economic factors that contribute to the implementation challenges of the automated system, to identify associated effects in the study area.

The selected School survey study required in the study area in order answered the following three research questions:- (1) what are the sources of contributing factors to the implementation challenge of School Management Information System (SMIS)?; (2) How to determine the influences of factors that contributed to the implementation challenge of School Management Information System (SMIS)? and (3) how to investigate the influences of factors to address the challenges in the study area?

The study adopted descriptive survey and employed both Quantitative & Qualitative research methods. In the actual research survey in probability sampling selection approach the researcher used simple random and purposive sampling techniques to administer questionnaire to each sampled respondents. Accordingly noted by (Kothari's) determination of sample size formula 46 respondents were chosen from the total 66 academic and administrative staffs in the selected school. The researcher used questionnaires, interviews and observation as Data collection tools and techniques. The collected data were analysed on the use of Statistical Package for Social Science (SPSS-27.0.1) application software tool on the descriptive statistics techniques like mean, standard deviation, frequency and percentages. The background of the respondents' information presented within tabular frequency and percentage. The results of the study shown Personal, Internal, and External related socio-economic factors and the respondents' demographical factors influenced the implementation of the automated School Management Information System (SMIS) technology in the study area. Due to this, most common mode of the school works on manual-based, which is inefficient and ineffective in the selected school. The study recommended:- the secondary school' academic and administrative staffs should take concrete corrections on their poor perceptions toward easefulness, usefulness and availability of the automated SMIS system. Schools should know the produced the SMIS technology surely has not usability issues (problems) on the school works, which means it is trust full for any school's task management procedures. The automated SMIS technology would have required attempter school. Hence, the school should attempt to implement it in their task management procedures. Schools should take concrete corrections regard reporting data through using the automated SMIS technology will punish our school's political situation (hint: finance audit, students dropout, pass & fail, bureaucratic). In addition, officials and schools should establish organized the SMIS teams/committees in school level up to officials in the study area.

CHAPTER ONE

1. INTRODUCTION

1.1. Background of the study

Development is mostly dependent on education. It creates the groundwork for long-term economic growth and it is one of the most effective tools for lowering poverty and inequality. In order to achieve this goal, our government has recently placed a strong focus on the education sector. Among the main initiatives implemented in secondary schools are initiatives for school enhancement including providing staff and supplies.

In today's competitive environment, the only major challenge is effective management of information. The only sure way of managing gathered information in an efficient and effective manner is by use of technology. These technologies come with their own challenges that may hinder organizations from fully adopting them[1].

An automated school management information system (SMIS) is a key instrument for streamlining and facilitating these processes. It is critical to give the next generation a solid educational foundation in order to foster the growth of globally minded individuals who would secure everyone's future. The sophisticated technology of today can be extremely helpful in streamlining education-related procedures in order to foster a sense of unity among students, teachers, parents, and school administration personnel[2].

Management information system assembles, processes, retrieves, stores, evaluates and disseminates the information[3].

An emergency does not wait for time and can be either acute or chronic, so action would have taken right away. Planning, scheduling, reserving necessary resources in advanced, coordinating well, establishing goals, and setting priorities are all necessary for a well-organized response that ensures the resiliency process to lessen the effects of conflict through approaches that are inclusive, responsive, right-based, and conflict-sensitive [2].

To achieve such emphasized issues in the secondary school contexts as a solution, the produced innovative School Management Information System (SMIS) technology has distributed for automating schools' daily activities.

As a result, the mobilization of implementing such technology has placed at two piloted secondary schools in Central-Ethiopia regional state, level in Ethiopia, as considered and evident that special schools at different stages of their journey towards ICT integration.

The introduction of using such automated School Management Information System (SMIS) technology resulted on efficiency functioning school leadership, and services on such highly motivated secondary schools. As the result also at the end of the year 2022 G.C, the complete package of integrated School Management Information System (SMIS) technological software product tools have produced, equipped with materialized and distributed at many facilitated secondary schools in the Central-Ethiopia regional state including the secondary school of Alem-Gebeya town administrator. However, there have implementation challenge of the School Management Information System (SMIS) technological tool in the secondary school of Alem-Gebeya town administration and any researchers have not yet given attention within the topic implementation challenge of School Management Information System (SMIS): the case of Alem-Gebeya town public secondary school. Old and manual systems managing information may not offer enough help in gathered information management in the school but rather needs implementation of the produced automate school management information system (SMIS) technology.

1.2. Statements of the problems

In today's artificial intelligence global world & business environment, information systems are part of the day-to-day delivery of quality services. Despite the fact that the produced School Management Information System (SMIS) technology would have expected to provide educational quality service outcome, the secondary school of Alem-Gebeya town administration has not fully implemented and applied it.

Such, evident on many delays in service deliveries; Poor attitude toward the School Management Information System (SMIS) technology; the school have miss-placed attentions in the reliability & usability of the produced information system technology, also the school poorly assumed that usability issues are challenges that discourage the school staffs from using it and even if increasing cost in information management. Due to this, the school academic and administrative task managements have been takes placed through manual-based, which is inefficient and ineffective to deliver quality services outcomes, increased workloads, sourced on conflict, and

increased costs in the study area. Owing inefficiency of manual based management system, implementing the automated School Management Information System (SMIS) required in order handling information about the staffs, students, activities, and facilities of the school in an efficient and effective manner in order to deliver quality services with regard to the timely production of ID cards, mark lists, rosters, report cards, transcripts, and other reports. The purpose of this study was to investigate the factors that contribute to the implementation challenge of the School Management Information System (SMIS) technology in secondary school of Alem-Gebeya town administration. To investigate the factors the following three research questions were important.

- i. What are the sources of factors, that contributing to the implementation challenge of the School Management Information System (SMIS) in the study area?
- ii. How to determine the influences of personal, internal and external related factors, that contribute to the implementation challenge of the School Management Information System (SMIS) in the study area?
- iii. How to investigate influences of personal, internal and external related factors those contribute to the implementation challenge of the School Management Information System (SMIS) in the study area?

1.3. Objective

1.3.1. General objective of the study

To investigate factors that contributes to the implementation challenge of the School Management Information System (SMIS) technology in public secondary school of Alem-Gebeya town administration.

1.3.2. Specific objectives of the study

- I. To examine the sources of factors those contributing to the implementation challenge of the School Management Information System (SMIS) in the study area.
- II. To identify the influences of personal, internal and external related factors those contribute to the implementation challenge of the School Management Information System (SMIS) in the study area.

- III. To investigate the influences of personal, internal and external related factors those contribute to the implementation challenge of the School Management Information System (SMIS) in the study area

1.4. Delimitation of the study

The study would be delimited the selected public secondary school (Sankura high school) only in Alem-Gebeya town administration, Silte Zone, Central-Ethiopia. Thematically the study restricting to investigate factors those contribute to the implementation challenges of School Management Information System (SMIS) system.

1.5. Significance of the study

A few secondary schools have started to realize the necessity to improve providing quality services delivery through School Management Information System (SMIS) technology in the Central-Ethiopia regional states level. Understanding and addressing this challenge is crucial for realizing the full potential of such technological tool in transforming school management system. The findings of this study would enable the secondary school of Alem-Gebeya town administration to know their respective status as far as implementation of the produced School Management Information System (SMIS) technology. By understanding, the challenges of implementing the system staffs can take concrete procedures to ensure that these systems fulfill their intended purpose of enhancing school management and educational outcomes. The government would have able to make informed decisions in the allocation of necessary resources to secondary schools of Central-Ethiopia regional state especially in the study area. The study would also enable all other major and minor stakeholders to get accurate and reliable information on the extent to which secondary school of Alem-Gebeya town administration level have implemented and applied that of the system. The significant of this research is not only for improving the management of the secondary schools of Alem-Gebeya town administration but also for informing broader efforts to integrate technology into educational systems in similar contexts. The study's recommendations can guide long-term improvements in countries' and regional states educational institutions.

1.6. Limitation of the study

In doing this research, the researcher may face some problems. One of the problems related to: Source of data: data is very important to make deep investigation about the problem and to give concrete conclusion for the study.

1.7. Definition of Key Terms

SMIS - complete package of the integrated school management information systems application soft ware product tool.

Quality service outcome - The ability to offer service that perfectly meet the expectations of the cutovers.

The Secondary school of Alem-Gebeya town - Secondary school founded in Alem-Gebeya town administration, which is located in Silte zone, Central-Ethiopia regional state, in Ethiopia.

Personal factors - Human resource constraints play a significant role, as the school staffs not practiced or trained to use the automated School Management Information System (SMIS) system due to unfamiliarity with innovative technology.

Internal factors - School related factors contributed to the implementation challenge of School Management Information System (SMIS) in study area.

External factors - External (body) parity related factors contributed to the implementation challenge of School Management Information System (SMIS) in study area.

1.8. Organization of the thesis

The study divided into five chapters. The first chapter covers the problem and its travel, as well as the background, objectives, delimitation, limitation, and significance of the study. The second chapter covers a review of the relevant literature, and the third chapter covers the study's methodology, analysis of the findings from the fourth chapter and a recommendation round out the fifth chapter.

CHAPTER TWO

2. LITERATURE

Introduction

This study concentrates on implementation of the automated School Management Information System (SMIS) in secondary schools. The literature reviews divided into three categories: (1) A theoretical parts covered various books, journals, and articles written on the topic of the study; (2) A related literature reviews; and (3) Pervious various empirical studies with their findings, full contents shown as in figure 2.1, below.

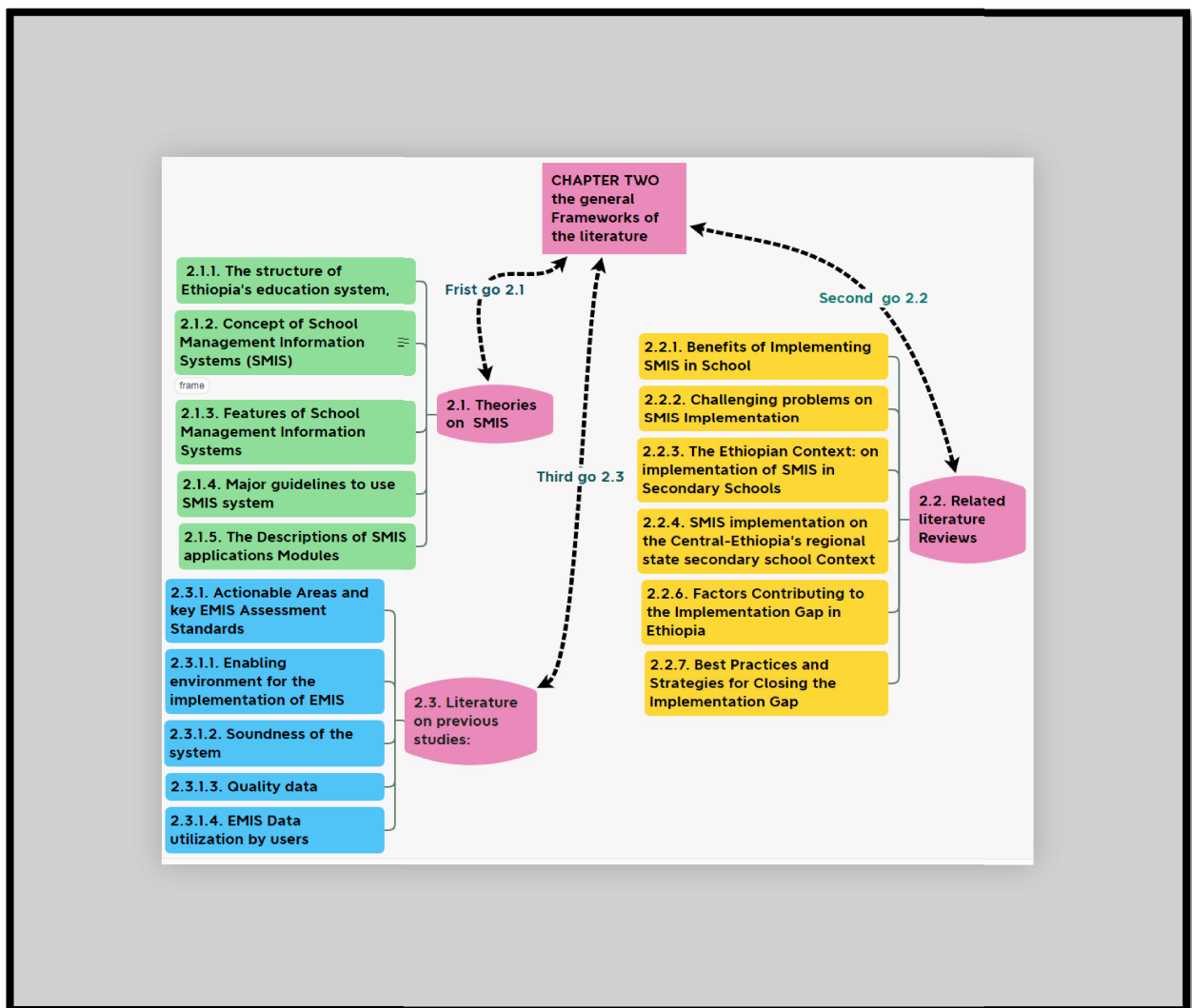


Figure 2.1: Shows full contents of the literature parts of this research

(Source: Designed by researcher SMIS-2024, studies).

2.1. The structure of Ethiopia's education system

The Ethiopia's, a 10-year educational roadmap, there have strategic shifts in the Ethiopia's education system to facilitate better implementation and management. This includes a reorganization of the structure: into 6+2+4, i.e. six years of primary education (Grades 1-6), two years of middle school education (Grades 7-8) and four years of secondary education (Grades 9-12). The age of completion of general education is raised from 16 years (at the end of Grade 10) to 18 years (at the end of Grade 12). Secondary education is organized into three categories: General education, Foundation TVET, and Special school for the talented. The education and training sector has also been split into two separate ministries: The Ministry of Education, which is now responsible for general education, starting from pre-primary to secondary, including the college of teacher training and the Ministry of Science, and Higher Education, responsible for TVET and universities[4].

Secondary education follows eight years of primary education and it is for children aged 14 and above. At the beginning of each academic year, which starts in September (Ethiopian New Year), the students get registered and assigned rooms. Each class (section) of students assigned to a fixed room. Homeroom teachers assigned to each class of students. There are two semesters per year. The first semester final examination is usually administered during January, the second semester final examination is administered during the end of June and consequently the results of each class of students is collected, organized, ranked by the corresponding homeroom teacher and reported to each student[2].

The homeroom teacher also records attendance of each student on each school day, which later organized by the attendance officer. A student who has been absent for more than twenty days is not allowed to take a semester final examination and would be forced to withdraw. The record officer generates transcripts student may request transcript when he/she wants to transfer to other school or when he/she has completed/graduated from the school and needs to join higher education or for some other purpose. Officials from Keble and sub-Keble education bureaus want to get statistical reports like number of registered students at the beginning of every year, number of drop outs, and number of passes/failures for each subject at the end of each semester as well as number of passes/failures at a grade level to help them participate in decision making[2].

2.1.1. School Management Information System (SMIS)

There have become increasingly important in educational institutions, offering improved efficiency in administrative services and data management[5]. With the help of comprehensive software package called the School Management Information System (SMIS). Educational institutions can automate a number of daily operations. School Management Information System (SMIS) is both an online and offline tool designed for many users that aims to facilitate the efficient recording and storage of data by record officers, teachers, directors, and storekeepers. These systems can tighten the traditionally loosely coupled instruction-administration subsystem in schools, enhancing accountability, evaluation, and decision-making processes (Telem & Avidov, 1995). School Management Information System (SMIS) implementation has shown positive impacts on school operations, providing structured interfaces for easy access to information on grades, schedules, and learning activities (Kamu et al., 2023). Despite potential technological infrastructure limitations in some schools, School Management Information System (SMIS) contribute significantly to school management (Demir, 2006). The adoption of School Management Information System (SMIS) observed to centralize data storage, processing, and retrieval, benefiting faculty and staff by streamlining transaction processes (Grepon et al., 2021). Overall, School Management Information System (SMIS) have demonstrated functionality, usability, and reliability in enhancing school management practices, with potential for wider application across various educational environment[6].

Thus, the program used standards-based user administration approaches, also known as role-based user management. While educational institutions are at liberty to generate an infinite number of roles within the School Management Information System (SMIS) software, the subsequent roles are imperative: Super-user: Within the School Management Information System (SMIS) application, a user holding this role has boundless possibilities. Administrator: Role-holders are able to create new users, roles, assign users to roles, and set user access tiers. Record Officers: Those in this role are in charge of managing all student records, including grades and individual student records, from the point of enrollment until graduation. They may print student documents as well, depending on the extent of their access. With this function, teachers can check student list reports, record student results, monitor attendance, access the timetable, and more[6].

2.1.2. Features of School Management Information System (SMIS)

Typically, School Management Information System (SMIS) gather data and organize it into conveniently accessible web-based data portals. The needs of parents, instructors, students, and other parties communicated by these personalized data. In the early 2000s, principals began to use information technologies more and more for day-to-day tasks. Generally speaking, to increase managerial efficacy by information processing and to surpass rivals by putting strategies in place to support ongoing student assessment, especially by making formative and summative assessments possible in order to manage adjustments to the curriculum, the learning environment, and the identification of students' needs. SMIS often utilized to automate or simplify routine administrative tasks in the classroom, such as monitoring attendance and corresponding with parents [3].

2.1.3. Major guidelines to use School Management Information System (SMIS)

Steps to use School Management Information System (SMIS) system as user technical support system administrator would have needed to provide you with instructions on how to use your web browser to find the pertinent School Management Information System (SMIS) URL. You will be required to provide your login and password when you first access School Management Information System (SMIS). Depending on what function each user performs within the system, this will change. After a successful login, you would have sent to the School Management Information System (SMIS) main browser page, where the majority of system operations have carried out[7].

The logging page of School Management Information System (SMIS) most users, using the system requires logging in, which would do via the login page. You have to check the two boxes that are in front of you. Click the login button after inputting your user name and password, which you should have received from your system administrator. If your password and user name are correct, the main browser page would then appear; if not, you would have redirected to the login page and a "login failure" warning will show [5].

Steps to login access the URL, open an alternate browser such as Mozilla Firefox, Chrome, or Internet Explorer, and enter `http://IP of the Web Server/smis`. It will show the page that follows. It is not permitting the user to change their username or password more than three times. The user's account would be locked by the system if their username and password are not entered

correctly for the third time. To obtain a password to access the system, he must speak with the system administrator [5].

2.1.4. The description of (SMIS) application soft ware Modules

User management is part of the School Management Information System (SMIS) solution, which is in charge of system user administration. To use nearly all of the features and functionalities of the School Management Information System (SMIS) solution, users must first properly log in. In this area, you have the following options:- Manage users: Information about system users is available for management on this page. Manage Roles: Users of School Management Information System (SMIS) are able to manage both users and roles. They can designate users to one or more roles and provide them different permissions based on the role, Assign roles to users: When users log into the system, they can assign roles to them. Controlling User Access Level: assigning each user the appropriate access levels [5].

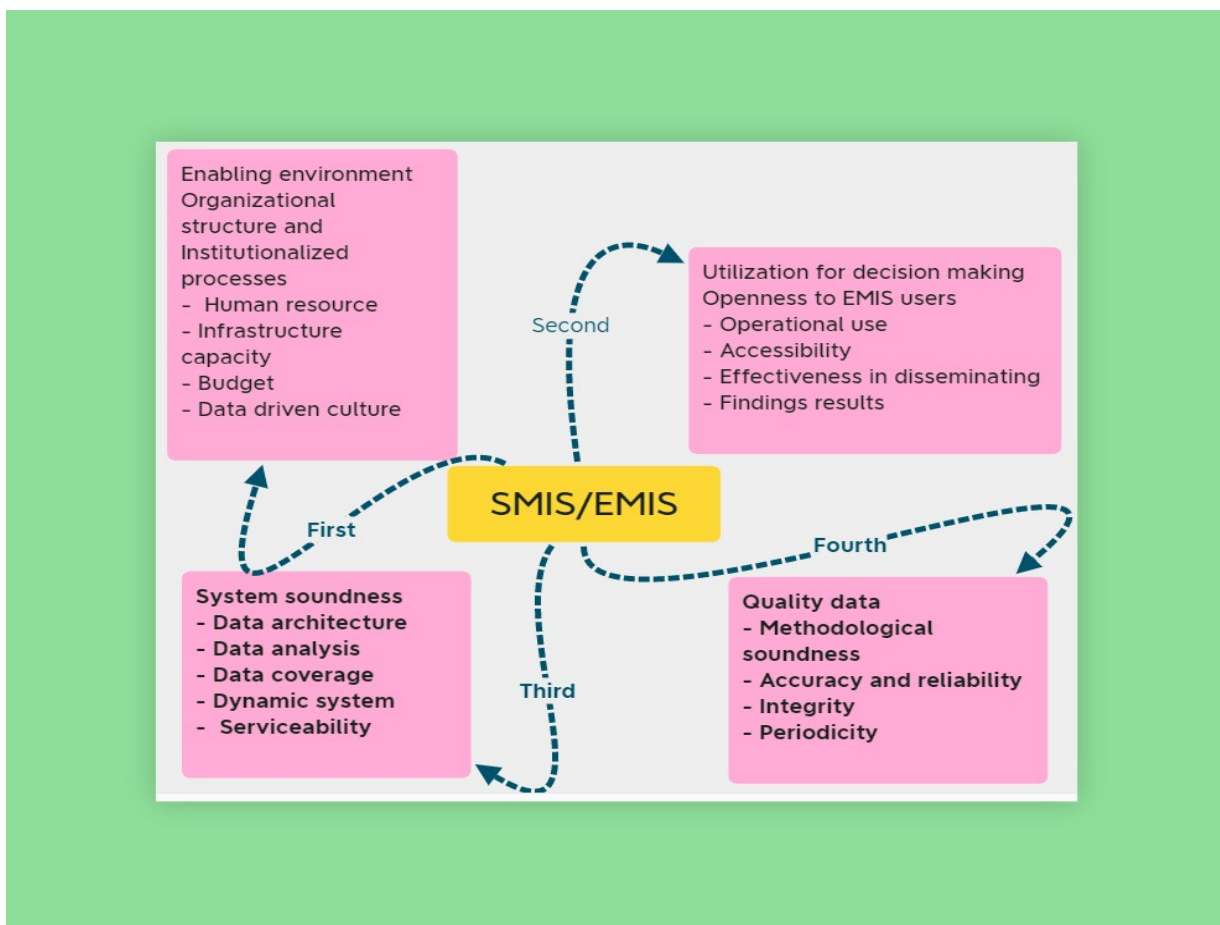


Figure2.2: shows SABER-EMIS evaluation Standards (SWOT analysis model)

(Sources: the researcher from SABER-EMIS evaluation Standards (SWOT analysis model)

2.2. Related Literature Reviews

The researcher would be start from reviewing about the overall relationship between Information technology and Information System, because he wants to know some concept about the Relationship b/n Information technology and Information System:

According to (O'Brien, 2004), the Successful companies and organizations depend heavily on information technologies (IT) and information systems (IS), though their duties differ, the definitions of IT and IS are closely related to one another. IT is concerned with goods, processes, innovations, and standards utilized in the information-producing industry.

It can also refer to the process of organizing, gathering, moving, retrieving, storing, presenting, and transforming data in any media (voice, graphic, text, video, and picture)[8].

Information can transfer between people, between people and machines, or between machines themselves. According to Boar (1993, p. 3), information management guarantees that IT assets are appropriately chosen, deployed, administered, operated, maintained, and evolved in accordance with business goals and objectives. IT is the term for goods, processes, innovations, and standards employed in the information-producing process (Kroenke, 2007). Information and communications services are provided for transaction processing, operations, administration, and management of an organization with application systems, personnel, and information technology infrastructure (Baskerville, Stage, & DeGross, 2000)[8].

Hardware, software, data, processes, and people are among the components of the information system (IS)'s data set that interact to produce information; these components are present in all information systems (Kroenke, 2007). The hardware, software, data, procedures, and people make up the key components of information system (IS). Software relates to word processing applications, whereas hardware includes computers, storage drives, keyboards, and communication equipment. Reports contain texts, phrases, sentences, and paragraphs that provide data or information. Additionally, procedures describe how to use the program and the associated tasks. People make up the final component. The five components play a crucial role in the information system (IS), which defined as a system of communication between individuals rather than just computers, software, and communication devices. Instead, information system (IS), also emphasizes the assembly of hardware, software, data, procedures, and people (Kroenke, 2007; Davies, 2009). The three more important jobs in information technology (IT) an enabler, a facilitator, and an initiator[9].

2.2.1. Benefits of implementing (SMIS) at schools

Goal: as (Sharma & Yetton, 2007), Research has investigated the main effect of training on information systems implementation success. However, empirical support for this model is inconsistent. We propose a continuous model in which the effect of training on information system (IS) implementation is a function of technical complexity and task interdependence. A meta-analysis of the literature finds strong support for the model, explaining the inconsistent [10]. (Abdullah, 2012) the implementation of large-scale information systems (IS) in hospitals has created much hype all over the globe. More governments have started to realize the necessity to improve its health systems through IS for the benefits of its people [10].

(King & Rodriguez, 1978) this seeks to develop a conceptual process through which information system may be evaluated on a systematic basis. We then demonstrate the potential feasibility of this process by applying it to the evaluation of an innovative information system [10].

As (Balcita and Palaoag, 2020), the use of technology to update school facilities has a significant impact on student accomplishment; therefore, the need to implement an integrated School management system based on a centralized database would improve the quality of school services. This means that one of the most important aspects of developing and implementing efficient information systems for schools is to start with the genuine needs of the school, which include classroom needs and building educators and students need [11].

SMIS implementation has shown positive impacts on school operations, providing structured interfaces for easy access to information on grades, schedules, and learning activities [12]

The advantages of a school management information system include improved control of the teacher and student attendance, improved management of instructors and students, improved reporting, and improved teacher administration [13].

Automated School Management Information System (SMIS) technology has demonstrated through functionality, usability, and reliability. In enhancing school management with potential for wider application across various educational environments and Universities acknowledge the importance of the School Management Information System (SMIS) which is complex processes cannot be done by certain people manually but made possible through the aid of technology, automating schools' activities help to reduce workloads, enhance time management, and generate timely and quality reports. School administrators use different ICT Tools and Systems to carry out their administrative and management duties correctly and productively (Omotayo and Chigbundu,

2017). Many choose to rely on technology for managing data and information because it makes work more reliable and fast[11].

The school management information system has been utilized for a variety of reasons, including data management, and the reports it generates aid in school decision-making for current and future advancements and innovations[11].

The long-term objective of Education Management Information System (EMIS) is to establish a self-sustaining and demand-responsive education management information system through sub-system integration, stakeholder participation, and technical competence from competent institutions (Tegegn, 2003). The three main objectives of data collection are policy design, policy execution monitoring, and policy evaluation (UNICEF, 2014). Below are some of the perspectives that numerous researchers have used to discuss the importance of education data were:-

Education data improve learning: According to UNESCO (2010), better educational data and learning outcomes may be measured and have financial benefits. EMIS evaluates the quality of outputs and outcomes, including the rate at which a level is finished, specific knowledge, skills, values, and behavior that have been acquired, the ability to create or obtain employment, involvement in and contribution to the community and society, and continuity in terms of learning, doing, being, and coexisting[14].

Education data strengthen the whole system of education: The expectation, value, and application of data by various educational system stakeholders is referred to as a "culture of data." It also suggests that procedures, daily operations, and decision-making all depend on data. Data are especially important for the development and evaluation of policies and standards, as well as for managing and communicating the distribution of resources, enabling the active, real-time use of data in the classroom, and supporting planning and administration in schools [6].

While data-driven decisions are essential in attempts to boost an educational system's efficacy, accurate and reliable information is still necessary to affect educational policies and programs (Hua & Heristein, 2003). Education Management Information System (EMIS) encourages productivity, provides timely, high-quality data, and supports the use of evidence in decision-making[14].

Data help schools, teachers and community to improve learning: Data systems engage the community and support school leadership, teaching, and learning to improve educational outcomes [6].

2.2.2. Implementation Challenges of (SMIS) at schools level

Management process issues speak to the functional operation of an organization such as budgeting and general management. Organizational environment issues would have identified as factors, which are less tangible such as organizational culture, change, and behavior. Leadership issues relate to the areas, which involve the interaction and direction of the organization executive. Technical systems issues are mainly those referring to the hardware and software considerations of information technologies. Personnel issues are those issues surrounding each individual in the organization. These issues impact the planning, procurement, and deployment of information systems in their organizations[15].

According to Waweru (2016), a number of problems affect the establishment of a functional Education Management Information System (EMIS). Both human and non-human resources are inadequate to meet the requirements; no clear-cut policy to be observe in the collection, submission, processing and utilization of data; lack of understanding and appreciation by the concerned education officials and staff in the use and application of Education Management Information System (EMIS); data are not clearly defined and not regularly collected. Data can both be analyzed and stored manually (using physical files) or using a computer (Mugo, 2014). The mode of data storage used either enhances or deter the processing, storage, retrieval and dissemination processes (Waweru, 2016). The proliferation of a large amount of data in schools makes data management less possible in the traditional manner and requires the use of modern data management systems interact with data (Schildkamp, et al., 2013). As to Schildkamp, most education systems require schools to record information on paper, the failure of many systems to inter that information in computer, to analyze that information or to share results with school leadership has reinforced poor reporting practices at many levels. As to Mekonnen (2010 sited in Ashenafi 2013), a lot of money, time and other resources have been invested in efforts to improve data quality, to computerize many administrative and management functions, to build Education Management Information System (EMIS) and encourage more data driven decision making over the past 15 years in Oromia region, Ethiopia. The results of these efforts have mixed. While there have been some notable successes in computerizing administrative

management functions in ministries throughout the region, despite years of efforts and considerable investment development of comprehensive, integrated computer-based EMIS have been slower than anticipated[16].

Different faced challenging problem developing a functional and effective Education Management Information System (EMIS): lack internet connectivity, lack of human resources, limited technical capacity, financial resource constraints, disparity in allocation of funds of coordination, lack of commitment by those in power of clear policies, high turnover of qualified staff and lack of a standard system for data collection[17].

According to the World Bank (2015), the main challenges to the effective use of data for secondary schools of time, particularly time to update and analyze the data, difficulties in applying data to classroom situations, limitations of data. The data collected/ recorded were too narrow/ academic or did not accommodate individual needs and information communication technology (ICT)-related issues[17].

Personnel issues pertain to each individual inside the organization problems have an impact on how their organizations develop, acquire, and implement information systems. This information system, issue classifications would serve as the framework for this study's analysis of the difficulties or issues that an organization encounters when implementing a new information system [14]. Moreover, Kwon and Zmud (1987) claimed that management information system (MIS) implementation procedures are challenging to complete. They also mentioned a few issues that many companies have faced, and these factors affect the organizational processes and final products related to each stage of implementation. These elements comprise the following: the specialization, centralization, and formalization of the organization; the complexity of the technology being adopted the task to which the technology has being applied (task variety, task uncertainty & the autonomy and responsibility of the person performing the task[1].

2.2.3. Implementation of the SMIS on Ethiopia's secondary school context

In Ethiopia, the government has emphasized the role of ICT in education as part of its national development agenda. Various initiatives have introduced to digitize educational management systems at both primary and secondary school levels as (MoE, 2019). However, the adoption and implementation of School Management Information System (SMIS) in Ethiopia's secondary schools remain inconsistent, with significant disparities between urban and rural schools. According to a study by Abera (2020), while some urban secondary schools in Ethiopia have

successfully adopted School Management Information System (SMIS), many rural schools lag behind due to infrastructure limitations, lack of trained personnel, and insufficient technical support[18].

The Ethiopia's, EMIS-ICT directorates have three teams. Those are Education Management Information System (EMIS) Team, ICT Experts Team and ICT Support Team. Main duties of EMIS and ICT Directorate is to collect and organize, education data, prepare Annual Education Statistics, deliver education related data for decision makers and users, and give technical support on ICT related issues[17].

As has been put by the Ethiopian Ministry of Education (MoE, 2015), during Education Sector Development Program-5 (ESDP V), Ethiopia's Education Management Information System (EMIS) system has continued to grow in strength throughout its operation for the past two sector plans. Education Management Information System (EMIS) offices now exist in all woreda and the annual survey of schools were completed effectively, albeit with some delays, with information aggregated at each level from institution to federal level. As the Education Management Information System (EMIS) system has grown and improved, new functions have been added (MoE, Ibid)[17].

According to the Ethiopian ministry of education (MoE), School Management Information System (SMIS) would have operated at the school level and when fully established can replace the annual school survey by linking to Education Management Information System (EMIS). The School Management Information System (SMIS) technology would support school leaders to collect, record, and analyses school performance data. The School Management Information System (SMIS) would focus on schools performance data, related to activities to be implemented school leader. School leaders have started to make use of information systems in the gradually increasing daily management of staffs[17].

As a result, the Education Management Information System (EMIS) procedure has allowed to grow at all levels of education, and the federal government reorganized as the information communication technology (ICT) & Education Management Information System (EMIS) Directorate in 2015. This shift, which increases the authority and responsibility of regional education bureaus, woreda, and schools, level it has, been implement Oromia education system (OEB)[17].

The Education Management Information System (EMIS) and information communication technology (ICT) teams of the Oromia Regional State have merged into a single directorate in 2019 and are now in charge of all Education Management Information System (EMIS) responsibilities, such as report writing, data gathering and analysis, publishing annual education abstracts, and distribution to all relevant parties [6].

The Education Management Information System (EMIS) collects, integrates, processes, preserves, and distributes data and information to support planning, decision-making, analysis, monitoring, and evaluation at all levels of the educational system. Arroyan and Subekti (2021) also discussed the necessity for innovation from the business to improve Education Management Information System (EMIS) development. The non-implementation of Education Management Information System (EMIS), as reported in Shah 2018[11], Nwankwo (2020), and Okeke and Ikediugwu (2021) publications, is another significant problem affecting secondary schools[12].

2.2.4. The Central-Ethiopia's regional state context: on implementing the SMIS

As (SMIS-2018), the cutting-edge school management information system (SMIS) technology has implemented and put into use by farka ICT solution public limited company (PLC) with funding from united nations international children education fund (UNICEF) and the Ethiopian Ministry of Education to automate daily operations in schools. The central-Ethiopia Regional State, Ethiopia, Education Bureau officials have start tasked with implementing School Management Information System (SMIS) at the secondary school level. As a result, they have assigned to two (02) schools in the region as a pilot project: YEBEROS–WULKITE and WACHAMO secondary schools, which are located in the GURAGEA and HADIA zones, respectively. In order to apply implement in the academic and administrative task management the two-piloted secondary schools. Such, successes fully applied. Therefore, in order to planning its implementation, in 2022G.C the automated-SMIS technological software tool would provided and furnished with resources to expand its application in many assisted secondary schools across the five (5) zones in the regional state, including secondary school of Alem-Gebeya town administration in the Silte zone[6].

2.2.5. Factor contributing to the implementation challenge of SMIS in secondary schools of Ethiopia

Several studies have explored the specific causes of the implementation challenge of School Management Information System (SMIS) in secondary schools of Ethiopia.

Infrastructural challenges are a major barrier, with many schools lacking reliable electricity, internet connectivity, and adequate hardware (Berhanu, 2020).

The Contributed factors to the implementation challenge of School Management Information System (SMIS) technology in Ethiopia's secondary school sourced from the following factors;

Internal related factors: Related to Infrastructural factors to Choe (2003), infrastructure is a set of interconnected structural elements that provide framework supporting an entire structure of development and basic physical and organizational structures needed for the operations of a society or enterprise. It also refers to the services and facilities required for an economy to function. The facilities that used to gather, handle, process, store, and even transfer information for consumption are necessary for its utilization. Information systems may not perform properly in organizations if they lack infrastructure. Some of the issues that high school level institutions continue to face, according to GOK (2008), are insufficient resources and capacity to accommodate the large number of students who want to enroll in high school level courses after completing their elementary and secondary education. The researcher suggests that the government is taking action to correct the situation because it is aware that there has been a problem with the nation's ICT infrastructure [12].

According to Terry (2005), a system is an arrangement of related components or things that work together to achieve a similar objective while according to predefined rules. All organizations are systems, meaning that all of its components work together to achieve a single goal.

According to Schifter et al. (2014), schools are no longer able to choose not to use data from school management information systems when making decisions. However, for a number of reasons, including timely data availability, data accessibility, and administrator awareness of how to use the generated data effectively, fundamental flaws with the process and its impact on practice persist. Data should make relevant by school management information systems, according to Datnow, A., & Park V. (2009). To do this, managers must make sure the data is current and responsive to each teacher's curriculum. The utilization of School Management Information System (SMIS) further hampered by insufficient professional development, training, or support systems [13].

Organizational Policies; a good policy should limit the attitude that managers and staff have, it should be in writing, it should be explicit, easy to read and implement. It should be in line with organizational goals and strategies. It should be useful and immediately applicable to the business, it should be reviewed and changed as needed it should be implemented and enforced it should be cascaded and interpreted at the lowest level. Organizations should have internal policies in addition to government policies (Devon, 2004). Policies would have implemented to manage and oversee a company and its surroundings, but management information system (MIS), in Kandere's opinion (2006), allows for flexibility and encourages human endeavors to boost output.

The destiny of the group would depend on how these regulations written. For example, an organization that strictly adheres to regulations is probably rigid; on the other hand, an organization that has more latitude in its rules is also probably flexible. It is easy to adapt to new developments in such a context [12].

Related to Leadership; 2004, pointed out that, depending on the structures already in place, internal social and political pressure could have the opposite effect, notwithstanding arguments for and against the effectiveness and logic of installing new systems in businesses. Leadership defined as having the ability to influence other people's conduct.

High-level Information and Communication Technology (ICT) leadership is needed at all institutional levels to provide political insight, inspiration, and oversight. Gathering the necessary resources to establish an Information and Communication Technology (ICT) environment that promotes foreign investment in the country it should made easier by strong leadership. According to Sabherwal et al. (2006), information is like blood that pours into an organization's vessels and gives it life. Procedures that deal mainly with internal information flow and the problem of environmental uncertainty implemented with the help of information systems. Information ambiguity is the state in which problems cannot be objectively and clearly comprehended or evaluated, and further data collecting is not practical. Another important issue that emphasizes the role of information systems in 13 implementing strategy is the demand that managers exchange information reciprocally. It describes a system that transmits data in both up and down directions. One tool that managers can use to collect and organize data so they can complete their tasks is an information system [12].

Personal related factors: Human resource constraints also play a significant role, as many school staffs are either not trained or are resistant to using SMIS due to unfamiliarity with the technology (Mekonnen, 2021). Lack of the required skills to prepare data collection formats; Lack of database management skills; Lack of data cleaning skills; Lack of data analysis skills; Lack of data presentation skills; Lack of data interpretation skills; Lack of statistical report writing skills[17].

Research conducted by Reid (2002) in secondary schools in Ontario indicates that 20% of the staff had Information and Communication Technology (ICT) skills. This indicates that a small percentage of employees are able to manage information using Information and Communication Technology (ICT) tools. To enhance their everyday information management, a number of employees do not make use of management information systems and other computer tools. In addition to helping teachers and staff handle information, technology solves a number of fundamental issues such handwriting, artistic ability, contrast, lighting, and visibility. Most firms use Management Information System (MIS) to provide information to their workers, who subsequently move it to other applications such as Word, Excel, and PowerPoint for processing (Roblyer, Edwards, & Havriluk, 2004).

perception is the general mental image of the world that formed by the information that people retrieve after filtering. To upgrade established middle level institutions to offer high-level programmers, which would improve the perception of many Kenyans on middle level institutions, said the Ministry of Education (2006) in one of its policies on middle level institutions. The government must influence the public's opinion of middle-level institutions in order to alter the majority's perception, as it is aware of how Kenyans see these institutions [12].

External related factors: Furthermore, the lack of consistent government and institutional support has led to delays and inefficiencies in system deployment, with some schools not receiving the necessary resources and follow-up effectively implement SMIS[12].

Economic Status: The type and caliber of information systems that would be implementing depend on an organization's financial situation (Terry, 2003). Because of this, the effectiveness of an information system would dictate the caliber of the system to be put into place and, consequently, the caliber of services that specific system would provide. Douglas (2003) states that in order to develop an organization's competitive strategies, it is necessary to comprehend its financial situation.[12].

Goals of management information system (MIS) systems; 2002, claims that efficient management information system (MIS) give leaders a tool to accomplish the objectives of their organizations. The extent to which an organization achieves its goals is what matters to them now. How they should consider everything to achieve the intended goals. Today's managers face challenges from rivalry, environmental dynamism, and unknowns both inside and outside the company, all of which have an impact on how well plans especially strategic ones implemented. Choi (2002) acknowledged that managers face several complexity in companies, making it difficult for them to carry out the objectives of the organization, even though he agreed with Walsh's points of view [12].

Economic Factors; explanation for this distinctiveness has found in the concept of resource poverty (Thong, 1999).

Literacy Levels ability to access, evaluate, organize and use information in order to learn, problem solve, and make decisions in formal and informal learning contexts, at work, at home, and even in educational settings is how Bruce (2002) defined information literacy. Information literacy is the ability to recognize when information is needed as well as the ability to locate, evaluate, and use it effectively, according to Plotnick (1999). Conversely, Doyle (1992) defined information literacy as the capacity to obtain, assess, and apply data from a range of sources. Therefore, in order to determine what information is pertinent to their business operations and what is not, any firm must position itself at a high level of information literacy [12].

Motivational Levels 2003, defined motivation as an internal force that propels a person toward a fulfilling goal. It has largely related to the advantages that a person gets from anything. People may have extrinsic or intrinsic motivation. Their interests may motivate a person, which known as intrinsic motivation. Nature has it by nature. Conversely, extrinsic behavior refers to actions taken with the expectation of receiving something in return, such as a pay increase, a promotion, or even other social benefits like status changes. The present study employed an exploratory and descriptive methodology, with a strategy based on two individual case studies and a cross-case analysis. These approaches facilitated the development of an understanding of the influence of IT on the development of business strategies in construction companies [12].

2.2.6. Best practices and strategies for closing the implementation challenges of SMIS

To address these challenges, researchers have proposed several strategies. Comprehensive training programs tailored for administrators, teachers, and IT staffs are critical for building capacity and encouraging School Management Information System (SMIS) adoption (Kassa, 2021). Moreover, enhancing infrastructure particularly in urban and rural areas, is essential to creating an enabling environment for implementation of School Management Information System (SMIS). Studies have also highlighted the importance of collaborative planning stakeholder involvement in the implementation process to ensure that the system was tailored to the specific needs of each school[12].

Only when school staff members develop an ownership-based attitude would be the full potential of SMIS deployment would achieved, and this can only happen when funding has secured. By giving the appropriate people access to the relevant information at the right time to enable them to make the best decisions, computer technology offers technical assistance to school educational management information systems[19].

Finally, continuous monitoring evaluation necessary for identifying gaps early and making necessary adjustments. Schools that have integrated regular feedback loops and capacity-building sessions into their School Management Information System (SMIS) implementation strategies have demonstrated for successful implementations[12].

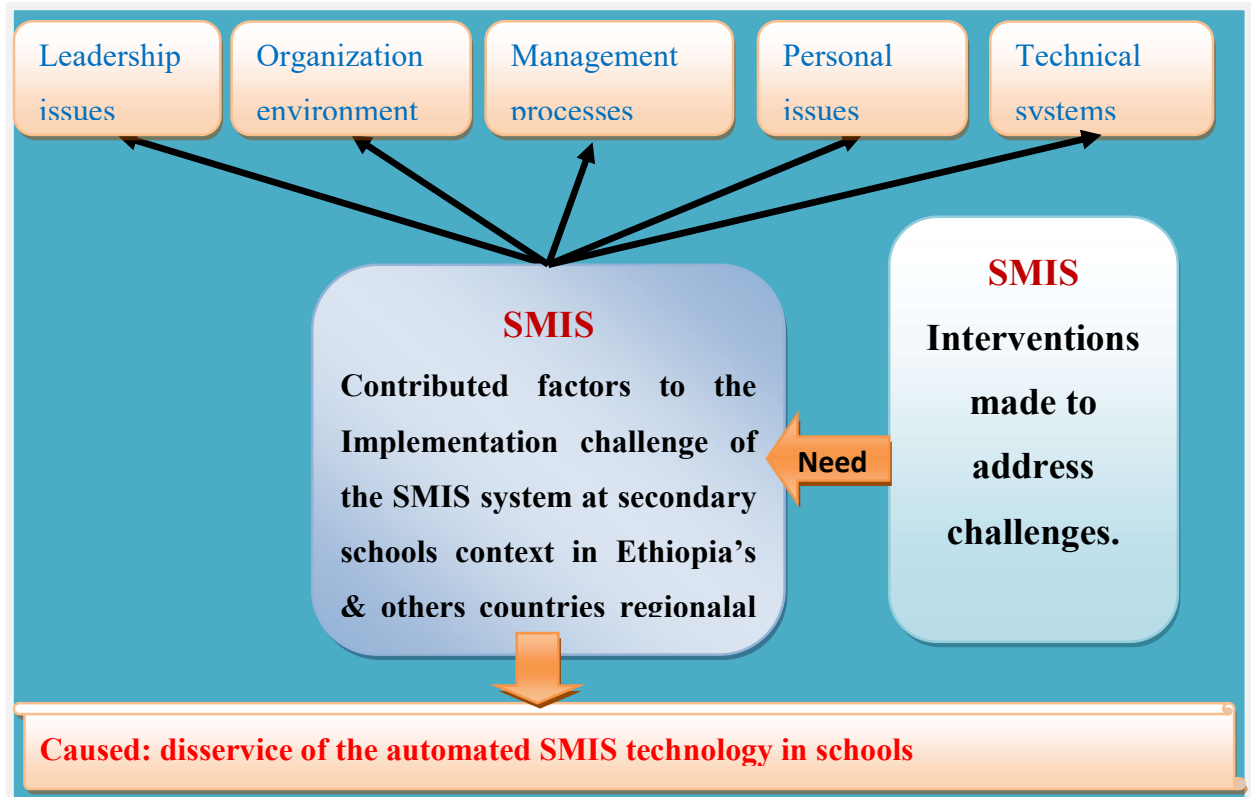


Figure 2.3: shows that the various studies related works on implementation

Source: researcher 2024, modified from (MIS-2012).

2.3. Literature on previous studies

A vast amount of literature has been evaluated to assist identify the characteristics that contribute to the implementation challenge of digital technologies and state-of-the-art MIS tools across a wide range of industries. These variables have been the subject of examination by numerous academics.

2.3.1. Actionable areas and key (EMIS) standards

In a study conducted by Durnali (2013), it demonstrated that there were improvements in terms of data collection, processing, storage, accuracy, analysis, and dissemination of student data when compared to the pre- and post-implementation periods of an e-School in their schools. Technology used for school development and management affects how society reflects changes in socioeconomic status, culture, and technology [4]

The actionable measurement standard of Education Management Information System (EMIS) **enabling to environment**: The budget, the data-driven culture, the organizational structure,

institutionalized processes, the human resources, the infrastructure, and the legal framework. As (German, 2015) conducted a study which revealed that the practice of Education Management Information System (EMIS) is affected by bad information culture, poor coordination, disorganized leadership, and a lack of a clear vision or strategic plan for data-driven decision making. Even at the provincial level, the availability of technology infrastructure and equipment varies and is mostly reliant on outside financing and/or donor help. The Provincial Education Management Information System (EMIS) Office only supplies the most basic information technology IT equipment (computers and related accessories) to the district Education Management Information System (EMIS) cells [6].

The discovery of According to a case study done in Kenya's Limuru sub-County and Kiambu County by Waweru (2014), principals and the staff of the Sub-County education office had greater access to computers than the HoDs. The study intended to evaluate the sufficiency of the technological infrastructure supporting Education Management Information Systems. The survey found that the schools without computers had either not had them for a long time or had them at one point but they had malfunctioned or been stolen. However, the results of a study recently carried out in Arsi Secondary schools in the Oromia regional state, Ethiopia, by German (2015) show that the majority of respondents 130 or 56.30 percent report that there is a lack of ICT infrastructure, no internet, and other electronic means of communication with users to receive or send data and information. The results demonstrate that it is challenging to use Education Management Information System (EMIS) effectively in schools without computers and other electronic devices. A digital Education Management Information System (EMIS) that facilitates timely, decentralized decision-making, according to Simon (2017), must support a variety of user objectives and needs and be adaptable enough to accommodate a range of work processes and tasks. Additionally, the technology must address infrastructure constraints and align with staff skill sets [6].

According to a study by Sajjid & Awais (2010), district level staff cannot effectively utilize databases or the data entry process if they have not received advanced training in database administration or other computer skills (such as hardware maintenance, network administration, etc.). In order to ascertain the computer literacy levels of school administrators, principals, and HoDs in Kenya's Limuru sub-County, Waweru (2014) conducted a study. The results showed that the HoDs' skill set was inferior to that of the principals and the Sub-County education office

personnel. Furthermore, while principals and HoDs frequently lacked computer literacy, Sub-County education office staff frequently possessed significant computer literacy. Betiglu (2016) detests that lack of funding.

Soundness of the system: As (Abdul-Hamid H., 2014) defines system soundness as the evaluation of how well the procedures and structure support the many components of an all-inclusive information management system, including data architecture, data coverage, data analytics, dynamic systems, and serviceability.

According to Cassidy (2006), an Education Management Information System (EMIS) is a complex, institutionalized system made up of institutional and technological setups for gathering, organizing, and sharing data within an educational setting. According to research by Sajjid and Awais (2010), access databases, which belong to the desktop category and are ideal for use by individuals and workgroups, are used in all 24 districts of the North West Frontier Province. It can only handle data in megabytes, which poses significant challenges for system administrators in terms of scalability when data volume increases. Additionally, because each computer in an Education Management Information System (EMIS) cell maintains its own unique database, there is a very significant danger to the security of the data. Using the Education Management Information System (EMIS) fully means a change from the manual system of managing information to an electronic one, which involves a total transformation in the way in which information is managed and used at the schools[20].

Analysis reveals that the data is vulnerable to both viral attacks and access by unauthorized individuals Shah 2014 states that there are several barriers to the adoption of MIS that is clear from the research. The most important ones are lack of time, lack of confidence or abilities, lack of training, lack of support from top management, and lack of technical support. Administrators and educators can obtain the data they need from MIS to support well-informed policymaking, planning, and assessment. In the areas of leadership, decision-making, workload, human resource management, communication, accountability, and planning, MIS have altered school administration[7].

Data quality: According to Cuartero and Role's (2018) research, EMIS reports have deadlines for (methodological soundness, accuracy and dependability, integrity, periodicity, and timeliness). It becomes customary to turn in reports by the deadline in order to prevent rushing things, and worse, when it disclosed during a management committee meeting[7].

Education Management Information system (EMIS) data utilization by users: Every module uses and distributes data that has been obtained and stored for properly planning the functioning of the entire school. A mean score of 3.31 indicates a high level of effectiveness (Cuartero & Role, 2018). According to Odhiambo (2017) study, there was a usually moderate use of Education Management Information System (EMIS) for curriculum and teaching, human resources, school-community relations, and finance in secondary schools located in Nairobi City County, Kenya. However, research done in Addis Ababa, Ethiopia, indicates that not all education leaders and experts use Education Management Information System (EMIS) data for planning or making decisions (Gizaw, 2016). Openness of data and the tendency of providing feedback, however, thought to be the primary issues. Feedback was not properly used to identify the accomplishments or areas of weakness noted by all parties involved[21].

Utilization Focused Evaluation (UFE) utilized by SABER-EMIS (2014) to assess an Education Management Information System (EMIS) in relation to the aforementioned policy areas. The strengths and weaknesses of an Education Management Information System (EMIS) system are determined by using a SWOT (strengths, weaknesses, opportunities, and threats) analysis to the evaluation results. In order to improve educational quality, SABER-EMIS is an evidence-based diagnostic tool that assesses the system's overall quality as well as the quality of the data it contains. It uses an indicators approach to concentrate on system components that can be observed and evaluated by an assessor who familiar with the policies and procedures of the statistical agency. Its objective is to assess an Education Management Information System (EMIS)'s main components, shortcomings, and strengths that are most important for raising student achievement[14].

The survey comprised two primary sections: the first part covered demographics, and the second part has divided into five categories, including decision-making, system quality, information quality, presentation, and satisfaction.

As **Abdul-Hamid H.**, SABER Education Management Information System (EMIS), tool provided structured methodology to assess and benchmark the enabling environment, system soundness, data quality and utilization for decision-making through utilization focused evaluation analysis model. Such assessment should guide the planning, design, and implementation of any Education Management Information System (EMIS) investments because

it could reduce cost, eliminate redundancies, identify priorities, highlight what to do and not to do, and help in the sustainability investment in data systems[7].

2.3.2. Findings of previous studies on various perspectives

There were five hundred items in the survey, all with Likert scales of 1 to 5. The instrument's dependability has assessed using Cronbach's Alpha reliability statistics. The instrument's reliability was supported by the results (satisfaction: 77%, system quality: 79%, information quality: 95%, information presentation: 88%). 96% of the results were reliable overall[22].

As (Petter et al., 2013) System Quality (SQ) is a measure of the hardware and software of the information processing system and is one of the metrics for the system itself. Sensitive actions like accessibility in earlier evaluations of survey instruments, Bailey & Pearson (1983), user friendliness, system dependability, and flexibility Srinivasan (1985), and Belardo et al. (1982) have used to obtain system quality measurement. Gürkut and Nat (2016) assert that decision-making satisfaction positively impacted by system quality. In light of this, the four aforementioned measures have considered, and the ensuring theories are put forth: The value of the information provided to the user has gauged by the information quality index, or IQ.

Gallagher's (1974), information system's user perception of values used to gauge the system's information quality. Information completeness, timeliness, accuracy, relevance, and content needs are the metrics used to assess the quality of information (Bailey & Pearson, 1983; Doll & Torkzadeh, 1988; Ge & Helfert, 2015; Iivari, 1987; King & Epstein, 1983; Mahmood, 1987; Miller & Doyle, 1987; Srinivasan, 1985). These five factors used to assess the information structure's quality Gürkut and Nat (2016) claim that decision satisfaction positively impacted by information quality. In light of this, the previously indicated measures have considered, and the following hypothesis put forth: The study of information presentation (IP) looks at how information presented. In contrast to tables, many studies have concentrated on factors like image formats, colors, and graphics, and how these factors help to decide" (Vessey, 1994). In settings where decisions made poorly designed screens and interfaces can negatively affect users and add needless work. Informational presentation dimensions include - visuals, hues, style of introduction, and ease of access.

In order to test our Model-1, component analysis used in this study to see whether each variable was accurately representing its corresponding variable. When Kaiser-Meyer-Olkin (KMO) and Bartlett's test used to analyze the system quality variables, the findings indicate that KMO is

0.790 for the system quality and that Aprox.Chi-Square is 646.231 with a significance level of 0.000. These findings suggest that factor analysis could perform on the data. The information presentation and quality variables were also subject to Bartlett's test. With a significance level of 0.000, the approximate Chi-Square value was 1313.032, and the findings indicate that the KMO for information quality variables is 0.945. The results indicate that the KMO for information presentation is 0.881, and the approximate Chi-Square value was 436.852 with a significance level of 0.000. These findings demonstrate that the data is appropriate for information presentation group of questions and factor analysis of information quality (Bharati & Chaudhury, 2004). Lastly, KMO and Bartlett's test used to analyze the satisfaction and decision-making variables. The results indicate that KMO for decision-making is 0.597 and Aprox.Chi-Square found to be 0.592 with a significance level of 0.000. For the satisfaction, the approximate Chi-Square value was 154.032 with a significance level of 0.000 and a KMO of 0.730.

These findings demonstrate that there was enough data for a separate factor analysis of satisfaction[22].

Based on the findings of our factor analysis, every variable could be used to test our Model-1. The absence of multicollinearity is indicated by the loaded value of the factors being more than 0.50 and the factor analysis table displaying the determinant being greater than 0.00001[16].

Obara, L. Elei, and Borura (2010) observed in their study on the implementation of information systems in state corporations that Parastatals in Kenya are utilizing ICT to enhance service delivery's efficacy, efficiency, and transparency by putting in place information systems. Nevertheless, there are implementation issues with these Parastatals. Establishing the practice of information systems implementation was the study's goal in order to ascertain the difficulties state Parastatals have while implementing information systems. The study used a survey design, and 53 of the 65 completed questionnaires used for analysis. According to the survey, the majority of state Parastatals implemented 24 information systems, but they did not have a thorough risk record or risk management protocols, which are essential for information systems to be successful. According to the report, firms should adopt transparent information procurement practices, minimize bureaucracies, and embrace good implementation standards. Additionally, management should hire qualified IT workers to advise organizations and anticipate the implementation process[23].

A Survey of Secondary School Teachers in Thika District, Kenya the primary goal of the survey was to evaluate how users perceived the electronic delivery of curricula, the complexity of its use, the need for ICT refresher courses, and the job security associated with the use of ICT educational support activities in secondary schools in Kenya. The study focused on all of the public and private secondary schools in Kenya's Thika region and used a descriptive research design Teachers and school administrators working in ICT deployment in Thika District secondary schools made up the study's population. The research employed several sampling strategies, such as stratified, simple random and purposive techniques. The target population Thika secondary schools divided into two primary strata using stratified techniques: public and private schools. After that, a 30% sampling from each category calculated to determine how many schools to sample the study's target response rate was 92%; however, it only received 86 replies, or a 93.5% response rate. These offered perceptions about the adoption rate of ICT in secondary schools. The study concluded that in order to improve the rate of ICT dissemination in secondary schools and reverse the trend of delayed ICT adoption, it is necessary to address teachers' psychological and technical skill readiness through increased investment in ICT facilities, resources, and training. This study determined the impact of internal, external, and personal factors on Kenyan educational institutions' adoption of computer-based management information systems. In order to make sure that pertinent MIS adoption-related factors examined, a case study approach used in this investigation. In order to guarantee that no respondent overlooked and to boost the sample size, the survey included the entire population. Study on the use, accessibility, and Matovu (2009) conducted availability of information and communication technology in the administration of Makerere University's student affairs. It was found that 22 ICT resources, including computers, Management Information Systems, and the internet, were most frequently used for exam management. These resources primarily used for processing exam results, monitoring student academic progress, assigning grades based on performance, facilitating communication between department heads and lecturers, and sending emails to students. It was once more observed that ICT was used for online results returns to students and for communication between university administrators and other teaching staff members[1]. According to the report, university administrations should provide users with appropriate ICT training and familiarization, including database management, typing and printing, online test management, internet and information system capabilities, and the provision of ICT facilities[1].

There are two secondary and one preparatory school in Gindeberet woreda. These three are Chulute Secondary School, Gindeberet Secondary School, and Gindeberet Preparatory School. Through use availability sampling, these three schools have chosen. Seven School Directors, one School Supervisor, six Unit Leaders, fifteen PTA members, and twenty-four Department Heads have chosen from among the three schools since they are the primary EMIS role-players. Furthermore, out of 113 Schoolteachers, 30 (26.5%) were chosen by stratified, quota, and simple random sampling methods due to their partial participation in EMIS activities. On the other hand, the study employed the availability-sampling method to incorporate the Woreda Education Office Head, two Core Process Owners, five Internal Supervisors, and two Woreda Education statisticians from Gindeberet Education Office as decision makers and actors in the EMIS [16].

When making preliminary judgments regarding the quality of an answer, the mean and standard deviation should have taken into account. The calculations for both indicators are easy.

The order of responses is taken into consideration as the deviation previous describes the average distance between two consecutive responses. The greatest number of consecutive items with the same response had counted by the indicator maximum sequence[5].

The disparity in research Regardless of the final research's results, testing the validity of the questionnaire employed and the responses received is necessary following data collection in a quantitative study. This is where the Cronbach Alpha enters the picture, offering a benchmark for determining the reliability of questionnaire replies prior to any statistical inference made from the study. This document uses Microsoft Excel to compute the Cronbach Alpha of a study on students' academic performance. The acquired value is compared to the dependability norms of Cronbach Alpha[23].

Significance of Calculating Cronbach Coefficient in academic Research, Cronbach's alpha represented by the Greek letter α used to examine the internal consistency or reliability of summated rating scales (Cronbach, 1951). Cronbach's alpha is the most common estimate of internal consistency of items in a scale (Cronbach, 1951; Cronbach & Shavelson, 2004). Alpha measures the extent to which item responses (answers to survey questions) correlate with each other. Alpha (α) estimates the proportion of variance that is systematic or consistent in a set of survey responses[23].

Streiner (2003) provides a table of values to explain the significance of the calculated value of Alpha, in relation to internal consistency and reliability, described as table 2.1, below.

Table 2. 1: shows that Cronbach’s Alpha and Internal consistency

No	Cronbach’s Alpha	Internal Consistency/ Reliability Test
1	$\alpha \geq 0.9$	Excellent (High -Stakes testing)
2	$0.7 \leq \alpha < 0.9$	Good (low Stakes testing)
3	$0.6 \leq \alpha < 0.7$	Acceptable
4	$0.5 \leq \alpha < 0.6$	Poor
5	$\alpha < 0.5$	Unacceptable

Source: Streiner, 2003:10

2.4. Theoretical frame works

Following research objectives a number of questions emerged, that required the research to interact with different stakeholders who are primarily the School Management Information System technology users at different levels within the secondary school of Alem-Gebeya town administration in Central-Ethiopia regional state.

As (Kim and Hall 2004), theories and models have used at the initial stage of research in order to guide the research and interpret its results. Theories and models provide frameworks to guide researchers to design and interpret conducted study results. Theories and models focus on people’s intention to engage in a certain performance as a main theoretical basis.

The principal aim of this research was to test an explanatory theory from the fieldwork on the use of the SMIS technology in secondary schools. Therefore, this study guided by the principle of diffusion theory and Unified Theory of Acceptance and Use of Technology (UTAUT).

2.4.1. Principle of diffusion theory

As (NYAMBAGA JOSIAH MUYESU, 2016) study: The Diffusion of Innovation Theory was first discussed historically in 1903 by the French sociologist Gabriel Tarde (Toews, 2003) who plotted the original S-shaped diffusion curve, followed by Ryan and Gross (1943) who introduced the adopter categories that were later used in the current theory popularized by Everett Rogers. According to Medlin (2001) and Parisot (1995), Rogers’ diffusion of innovations theory is the most appropriate for investigating the adoption of technology in higher education and educational environments. In fact, much diffusion research involves technological innovations so Rogers (2003) usually used the word “technology” and “innovation” as synonyms. Rogers (1962) distinguished five categories of adopters of an innovation: innovators,

early adopters, early majority, late majority, and laggards. Within this theory, the goal is not to move people within five adopter categories into another category, but to streamline the innovation to meet the needs of all five categories. For Rogers (2003), adoption is a decision of “full use of an innovation as the best course of action available” and rejection is a decision “not to adopt an innovation”[24].

This theory was best in finding explanations to the theory on the factors that contributed to the implementation challenge of the SMIS technology in secondary school of Alem-Gebeya town administration in the Central-Ethiopia regional state.

Strengths of the diffusion theory firmly grounded on the characteristics of innovations that are as follows: relative advantage, compatibility, complexity, trial-ability, and observability. According to Rogers (2003), “individuals’ perceptions of these characteristics predict the rate of adoption of innovations”[24].

The approach that the researcher used to investigate the factors that contribute to the implementation challenge of the produced School Management Information Systems technological product tools in the selected secondary school of Alem-Gebeya town.

2.4.2. Unified Theory of Acceptance and Use of Technology (UTAUT) model

As (Venkatesh, 2000); New system or new technologies acceptances require inputs from the organizational, managerial and individual level. It is not only important to understanding end users’ attitudes and intentions, but also management strategies, procedures and actions, which have significant effect on the successful acceptance of a technology.

As (Kim and Hall 2004), Unified Theory of Acceptance and Use of Technology (UTAUT) model is as a one theory that discovers individuals’ behavioral intention in a different constructs like gender, age, and academics they use as moderating variables. It included the three direct determinants of intention to use new technology performance expectancy, effort expectancy, social influence and facilitating conditions.

As (Venkatesh, et al., 2003), there are two direct determinants of usage behavioral intention, as (Hassen and Spante 2012) study, these relationships moderated by gender and age, This study preferred the Unified Theory of Acceptance and use of technology model.

The Purpose of the Unified Theory of Acceptance and Use of Technology (UTAUT) model is to clarify users’ intentions to use Information System and consequent behavior. Unified Theory of Acceptance and Use of Technology (UTAUT) model suggests four core constructs to explain

and guess user acceptance of technology adoption, which: performance expectancy (equivalent to perceived usefulness), effort expectancy (equivalent to perceived ease of use), facilitating conditions, and social influence. Look at given below figure 2.4: shoes that, Unified theory of acceptance and use of technology (UTAUT) model.

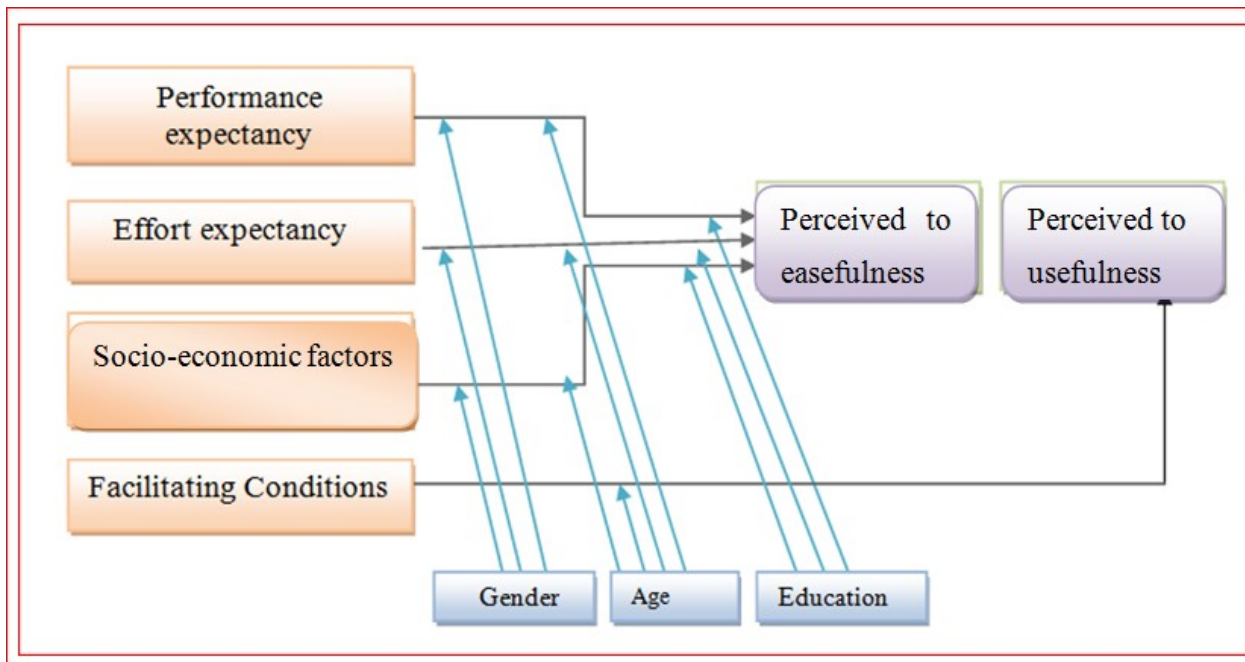


Figure 2 4: shoes that, Unified theory of acceptance and use of technology (UTAUT) model.

Source researcher, 2024 modified from (Kim and Hall 2004, UTAUT) model

The variables are also Gender, Age and education level, which affect the performance of the factors. In the unified technology of acceptance and use of technology, performance expectancy, effort expectancy, and social-economic factors, variables have direct effects on the behavioral intention. Which affects the use behavior; however, facilitating condition of variable has directly influence on the use behavior.

As (Mohammad-salehi and Tabrizi 2021), **the performance expectancy:** effort-Expectancy and Socio-economic-influence. The effect of facilitating conditions on behavioral intention not considered because it assumed not significant when both performance expectancy and effort expectancy have been included. Such factors affect the use of behavior and adoption Management Information System (MIS).

Effort expectancy: The step of ease associated with the use of School Management Information System (SMIS) technology. Effort expectancy imagined to adequate the influence on behavioral intention according to Gender, Age and education level.

Socio economic influence: The point to which an individual perceives that important others believe he or she should use the new technology. Socioeconomic influence, assumed to adequate the influence on behavioral intention by gender age and education level.

Facilitating conditions: The idea of an individual believes that an organizational and technical moderate the influence on use behavioral according to age more information Figure 2.4: conceptual frame works of the study

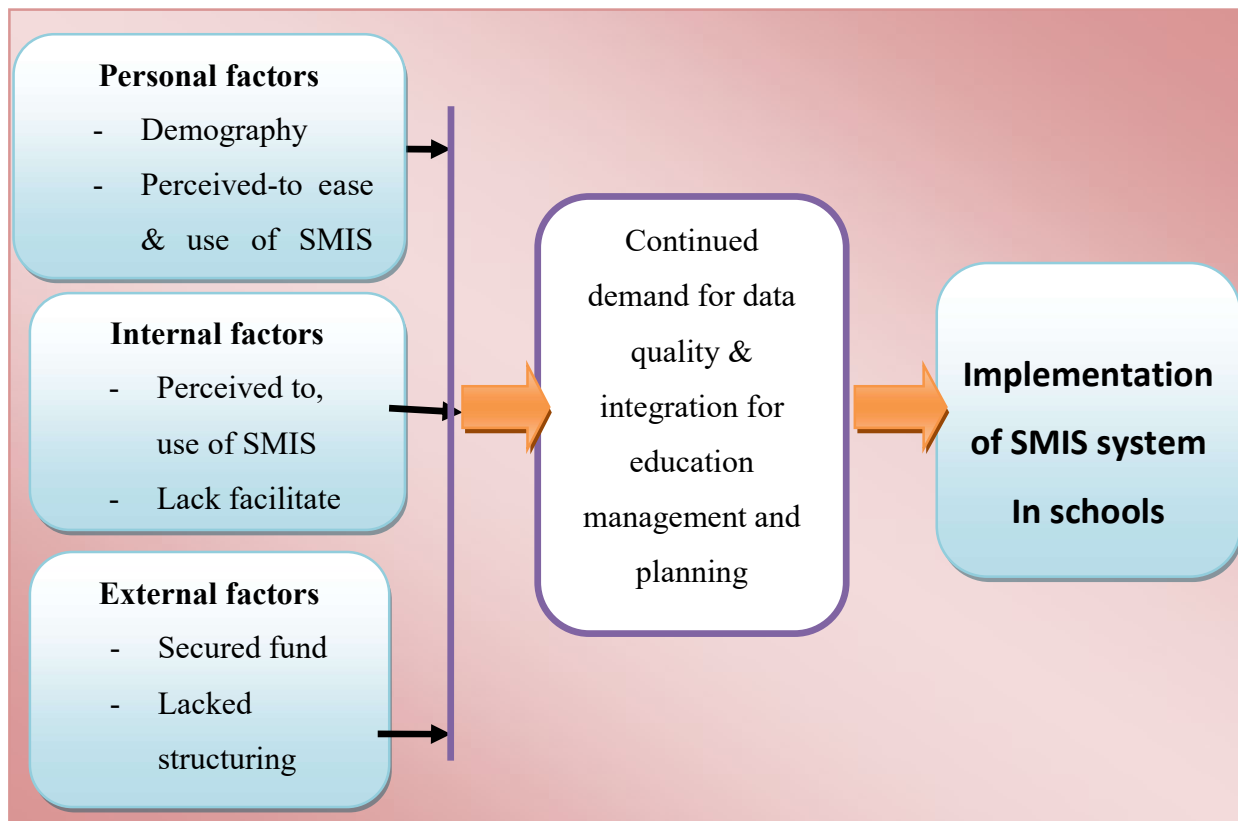


Figure 2 5 conceptual frame works

(Source researcher Wabela Kemal, 2024)

2.4.3. Conceptual framework

As (SMIS-2018), many studies have been examined the adoption of information system technology as educational management information system (EMIS/SMIS) technology in various Ethiopian secondary schools, especially in Oromia regional state. However, such implementation progresses are not fast and broadly applicable in large-scale schools coverage, due to rejection of implementing such systems required inputs from individual, organizational and managerial level on the perspectives of secondary schools. From the literatures reviewed, the following three

basic points have viewed as frameworks, which were personal, internal and external related factors that as sources of contributed factors to the implementation and applications challenges Of the produced automated school management information system (SMIS) technological product tool in secondary school context. Due to this, the researcher used as a bench marked to the study implementation challenge of School Management Information System (SMIS) in public secondary school of Alem-Gebeya town administration.

CHAPTER THREE

3. RESEARCH METHODOLOGY

3.1. Research Design

As W. Mati, (EMIE-2020): In order to ensure that address the research problem, effective research design is important, it refers to the overall strategy that researcher chosen to integrate the various study components in a coherent and logical way. It serves as the blueprint for the data collection, measurement, analysis, and interpretation.

The research design is to provide the collection of relevant evidence with optimum effort, time and expenditure. The choice of survey design was grounded in its applicability to wider area of investigation[7].

According to (Kombo, 2006), a descriptive survey is a technique for gathering data that involves giving a questionnaire to a sampled of people in order to get proof of all current circumstances and compare the current circumstances with the potential course of action.

Since, the objective of this study was to investigate factors that contribute to the implementation challenge of School Management Information System (SMIS) technology in secondary school of Alem-Gebeya town administration the descriptive survey was appropriate in terms of research design. Hence, the study employed descriptive survey research design because the researcher would get an opportunity to investigate, establish & describe the influences of factors those contributed to the implementation challenge of School Management Information System (SMIS) technology in the peripheral area.

3.2. Research Approach

This study employed the quantitative and qualitative research approach as its research methodology respectively. These approaches were suitable as it allows for a comprehensive understanding of the problem by gathering data. As (Ahmad et al, 2019), described a Quantitative research establishes cause and effect relationship between dependent & independent variables. A Qualitative research used to gain an in-depth understanding of human behavior, experience, attitudes, intentions, and motivations, based on observation and interpretation, to find out the way people think and feel[23].

3.3. Description of the Study Area

The study carried out at the Alem-Gebeya town secondary school in the Silte zone of the Central Ethiopian Regional State. The selection of Alem-Gebeya town in Central-Ethiopia regional state, made based on the researcher's familiarity of the locality, the accessibility of the locality which easy for the researcher to develop immediate understanding with the respondents hence making data collection precious and un expected cost inflection. It chosen because of its ideal setting; that related to the researcher's interest; easily accessible; and allows the development of immediate understanding with respondents.

The settlement is roughly 72 kilometers northeast of Hosanna, the regional capital, and 215 km south of Ethiopia's Addis Ababa. It shares borders with the Sankura Woreda's East Menzo and Menzo-fatten kebeles, the West Adashaziko and Getem-ziko kebeles, the South Tachqemo kebele, and the North Getem Kebele.

From <https://latitude> to access date December 2022, the town's geographic coordinates are 8°10'00" North latitudes and 37°58' 60" East longitudes. Its altitudinal range is 1799 to 2001 m a.s.l., with the majority of that being 1800 m a.s.l. According to CSA data from 2007, the town has a total population of 39,954 people, of which 19,813 are male and 20,141 are female. The administration's entire area covered is 3,194 hectares.

The Sankura high school has been the only study subject. The Sankura high school established in 1996 E.C. and it consists of nine buildings including thirty-three classroom sections for administrative and instructional functions. 18 regular learning sections, 3 fully equipped science laboratory sections (physics, chemistry, and biology), 2 fully equipped school Net (cloudy computing) computer rooms, 1 E-learning room, 2 store rooms, 1 library room, and 6 administrative mini-rooms all combined made up the classes. The Sankura high School's 66 (sixty-six) academic and administrative staff members, including the school directors and supervisor were the target group.

3.3.1. Economic activities

The secondary school receives incomes from a variety of sources, including community involvement, school grants, internal agricultural commodities, and other various penalty related measured issues.

3.3.2. Social services

The social services provided by the secondary school were ineffective and inefficient in meeting the demands of the school societies, just like in other non-facilitated secondary schools across the region. There have been four official laptops, twenty desktops computers, over twenty e-learning computers, and seventy-five zeros client computers with 2 servers computers, and a full set of the produced integrated School Management Information System (SMIS) application software. In addition to that over twenty-five plasma TV screens, four routers with WI-FI -ADSL boxes, and 02 satellite dishes, functioning electricity were a part of the school has local network computer-system, (Source: the selected secondary School data 2024).

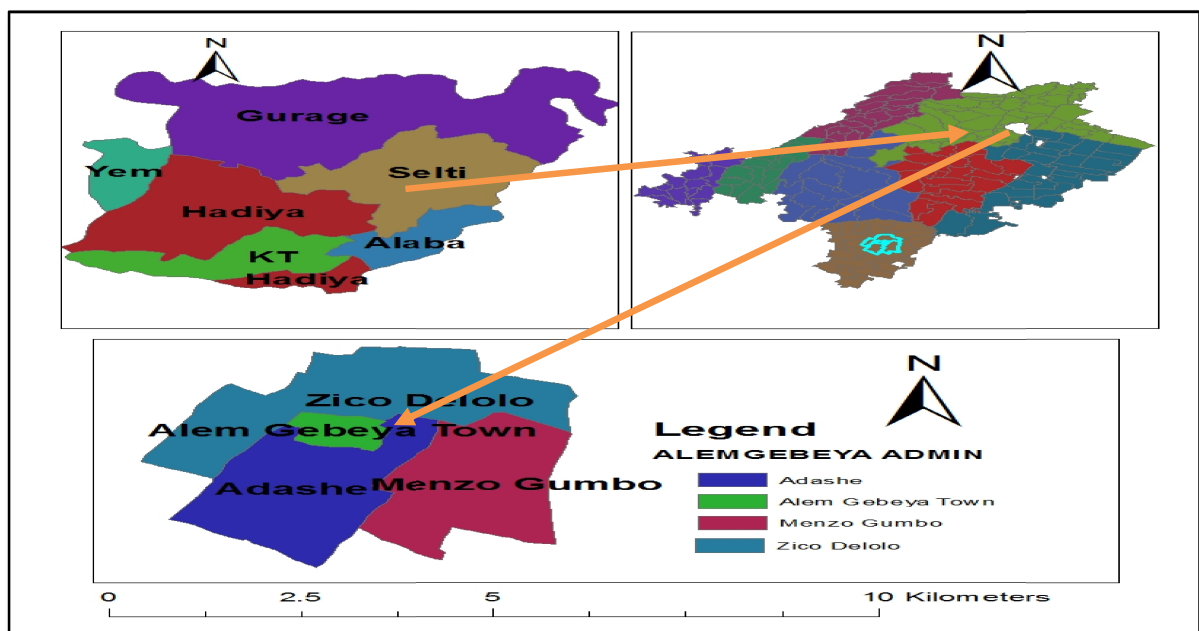


Figure 3. 1: shows Map of the study area, (Source: - Researcher 2024)

3.4. Sample Size and Sampling Techniques

The study selected with since automating daily activities in schools in the peripheral area has been a difficult challenge, due to the implementation challenge of School Management Information System (SMIS) in the secondary school of Alem-Gebeya town administration, Silte zone, Central-Ethiopia. However, no a researcher has yet focused on the context of implementation challenge of the School Management Information System (SMIS) in secondary school of Alem-Gebeya town.

According to Central-Ethiopia Regional State education bureau, report in Alem-Gebeya Town Administration there had the only one (01) General secondary school; therefore, by using available sampling techniques, the Sankura high school selected as the study subject. According

to a report by the Alem-Gebeya Town Administrator Education Unit Sector 2024/2016 E.C, the total anticipated number of academic and administrative staff members, including the secondary school supervisor, at the Sankura high School has sixty-six (66). From these fifty(50) were academic staff members and sixteen (16) were administrative staffs, these individuals classified as liberalists, record-officers, human resource management (HRM) personnel, store personnel, and record-officer.

Simple random sampling technique used to administer a questionnaire. In an actual research survey, simple random sampling is unlikely to be a preferred sample technique[25].

Babbie, (2001) noted that working with a sample reduces the length of time needed to complete research, cuts cost, is manageable and is almost a mirror of the entire population[24].

Accordingly noted by (Kothari's) determination of sample size formula, 46 respondents have selected from the academic and administrative staffs.

$$n = \frac{Z^2 * p * q * N}{e^2(N - 1) + Z^2 * p * q}$$

Where, P = 0.1 (population proportion to be included in the sample, which is 10%), Z = 95% confidence limit (interval), which is 1.96 provided or constant, and n = sample size = it depends; N = total number of staff members detected in the study area; e = accuracy or sample error level = 0.05; q = none incidence of event = 1-p = 1- 0.1, or (0.9).

$$n = \frac{(3.84 * 0.1 * 0.9 * 66)}{0.0025(66-1)+(3.84 * 0.1 * 0.9)} = \frac{22.8}{0.5} = 45.6, \approx 46 \text{ rounded to } 46 \text{ is the sample size.}$$

A questionnaire distributed to each staff member in the study area of the selected the secondary school academic and administrative staffs, using a simple random selection approach.

Sampling proportion to population utilized, to determine representative samples from each both staff category, as in the following: **Pi** is equal to $\frac{ni}{N}$

Where the population proportion included in the study area expressed as Pi, n is the sample size. N is the entire population of the intended audience. This meant that the percentage from each staff group was, $Pi = \frac{46}{66} = 0.69$.

Table 3. 1: shows selected participants in the study area

Table-3.1: Selected staffs of the study area			
	Staffs category	Target population	Numbers of Sampled staffs
	Academic or teaches.	50	35
	Administrative	16	11
	Total	66	46

Hence, 46: the school's staffs have had selected from the total target population by using simple random sampling method.

Further, from the secondary school staffs who have more responsible and actors in the progress of the whole school activities, one (01) supervisor; one (01) Director; and one (01) teachers-association (representative): totally three (03) key informants were involved in the personal interviews for qualitative data by used purposive sampling technique. Given below in the Table-3.2, shows that the Selected key informants of the study.

Table 3. 2: shows key informants for personal interview

Table-3.2: key informants for personal interview			
No	Names of key informants	Sampled for interviewers	Sampling techniques
1	The Secondary school Supervisor	01	Available Purposively
2	Secondary school Director	01	
3	Secondary school teachers-association (representative)	01	
Total		03	

3.5. Sources data

Both primary and secondary data employed in this study to help meet its goals. The secondary data gathered from various reports, files, and documents, as well as from the Sankura Secondary School Bureau graphs and charts including tabular data. In order to understand the circumstances surrounding implementation challenge of the School Management Information System (SMIS) in

the Sankura high school in the Alem-Gebeya-town administration, it was necessary to gather primary data through questionnaires, interviews, and direct observation using both data sources. It was also crucial to be realistic.

3.6. Data collection tools and techniques

3.6.1. Self administrated questionnaire

Following the selection of respondents' questionnaires distributed to each research population along with some sort of orientations and instructions on how to complete them out technically.

The questionnaires categorized in to two main parts appendix A and B: appendix A, contained two parts which are demographic questionnaire and socioeconomic related factor (personal, internal, and external) which also contained a Likert 1 to 5 scale scenarios as variables on the School Management Information System (SMIS) implementation processes in order to get the data required for the study.

The investigation of attitudes and norms allows being gain a deeper understanding of the relation between psychological factors and behavior besides socio-demographic and spatial characteristics. The process is simple and convenient, but also allows the participants easily run through the given statements without careful reading and understanding of the questioned content[5].

3.6.2. Observation

In order to gather information and validate the respondent's information with the reality on the ground, observations made to various implementation challenges of School Management Information System (SMIS). As a result, the researcher saw the overall situations of contributed factors to the implementation challenges of School Management Information System (SMIS) technology in the selected school.

3.6.3. Interview

In-personal interviews with concerned members of the secondary school staff who are more responsive to the success of the various school activities conducted using well-structured open-ended questions by one (01) supervisor, one (01) vice-director, and one (01) parent-teacher' association representative. The three key informants in total participated in personal interviews to collect qualitative data about the causes and effects of implementation challenge of School

Management Information System (SMIS) technology and to deal solutions with the difficulties of implementation of the system and recommendations for feature condition in the research area.

3.7. Description of variables

The study's dependent variable was implementation challenge of the School Management Information System (SMIS) technology, while its independent variables included demographic related factors (Gender, Age & Education level) and socioeconomic factors (personal, internal, & external factors). Any attribute that can have multiple values would have considered a variable in subsequent study. In order to determine the origin of implementation challenge of the School Management Information System (SMIS) technology in the selected secondary school and its implications, researchers frequently measure or modify independent and dependent variables in their investigations.

3.8. Procedures of data collection

The researcher designed tools based on the objectives of the study. The respondents' assured confidentiality of their responses and the researcher confirmed them in that their responses used only for academic purposes. Each questionnaire Talley-marked managed and recollected back from the respondent and the researcher only knew which person responded for the raised questions. Returned completed questionnaires with those delivered to the respondents to collect primary data. Finally, the observation conducted for 03 consecutive days in the study area, which has undertaken by the researcher in person.

3.9. Data analysis tools and techniques

To get the collected data ready for analysis, the questionnaires checked for completion, classified and then tallied by the researcher himself. The frequency counts and percentages used to analyze the background information of the respondents, whereas the quantitative data obtained in relation to main questions of the study was analyzed by using mean scores with standard deviation[7].

To facilitate the interpretation of the results, the survey data analyzed using tools from SPSS (version 27.0.1). The scores of each item was statistically organized and imported into Statistical Package for (SPSS-27.0.1) to obtain sum, mean value and standard deviation.

The quantitative data examined using percentages, and frequency distributions; the results were interpreted using tables. Furthermore, the qualitative data assessed and analyzed in order to

create narrative, explanatory and descriptive texts. Both qualitative and quantitative data collection techniques to measure, collect, analyze, and interpret the data in the context of Alem-Gebeya town administration, Silte zone, Central-Ethiopia regional state, in the focused area of the Sankura high School.

3.10. Ethical consideration

The results of this study should not be detrimental to the participants or the school community. All results presented in a confidential manner, with no personal or identifiable information had being recorded or printed in the study. Privacy and confidentiality must be respect. Consequently, prior to the collection of data, a formal letter had provided to the researcher from Hawassa University 30/12/ 2014 E.C. The researcher then displayed this document to the relevant organization and explained the general purpose of the study, obtaining permission to collect data on their behalf. The population source has given explanation the study's objective by the researcher, and eventually they gave the right responses.

3.11. Validity

To secure the validity and reliability of the instruments with the objective of checking whether, or not the items included in the instrument could enable the researcher to gather helpful information the pilot test conducted.

As W, Mati, (EMIS-2020) study, before the actual study, the researcher was conducted a pilot study. Besides, the necessary amendments were made to correct confusing and some sort of ambiguous questions before it is statistically processed[7].

Robson (1993) argued that piloting provides opportunity for researchers to test their confidence in identifying shortcomings that may affect the actual collection of useful data. The pilot study evaluated the effectiveness and validity of the instruments. The purpose was not to collect data but to refine the process and instrument. It provided an opportunity to detect and remedy potential problems such as questions that respondents didn't understand; questions that combined two or more issues in a single question (double-barreled questions); and to exclude questions that might make respondents uncomfortable.

In the secondary school of Alem-Gebeya town, where 01 principal, 01 supervisor and 05 homeroom teachers were used as pilot test, it included checking the validity of the produced School Management Information System (SMIS) tool with some sorts of entering data, help to

refine the School Management Information System (SMIS) technological tool is whether valid or not. Moreover, all data collection tools and techniques appreciated as suggested by Alem-Gebeya town administration social-service cluster office, database manager experts (statistician) and best fitted the School IT teacher as School Management Information System (SMIS) supper admin.

3.12. Reliability

As (Y. S. M. F. Jugessur) disparity in a research Regardless of the final research's results, have tested the validity of the questionnaire employed and the responses received has necessary following data collection in a quantitative study. Thus where the Cronbach Alpha enters the picture, offering a benchmark for determining the reliability of questionnaire replies prior to any statistical inferences had made from study[23].

This research document used Microsoft Excel with Cronbach Alpha to compute the reliabilities of respondent's results on implementation challenge of School Management Information System (SMIS) study which resulted as ($\alpha=.981$).

CHAPTER FOUR

4. DATA PRESENTATION AND DISCUSSION

4.1. Respondents' Demographic Information

Questionnaires completed by 46 the Sankura High School academic and administrative staff members in Alem-Gebeya town administration. As shown table 4.1, the gender characteristics were observed that the majority of the respondents were Male 39 (84.8%), while small proportions 7 (15.2%) were Female respondents.

As shown in the table 4.1, in the ages group brackets 13 (28.3%) of respondents fall in [18-30], 16 (34.8%) were fall in [41-50] and 17 (37.0%) fall in [31-40].

It is also evident that from the table 4.1, all staffs consider themselves as literate since there is zero illiteracy 27 (58.7%) of respondents have degree, 11 (23.9) have Masters Degree, 5 (10.9) Diploma holder 3 (6.5) TVET college graduated and none had other qualification.

The high percentage of the respondents with degree & master degree in university education attributed to the fact that the Sankura High School's most of its staff members must have the minimum qualification as set by employer.

Table 4. 1: shows that the respondents' demographic information

Scaling items		Frequency	Percent	Valid Percent	Cumulative Percent
Gender	Female	7	15.2	15.2	15.2
	Male	39	84.8	84.8	100.0
	Total	46	100.0	100.0	
Age	18-30	13	28.3	28.3	28.3
	31-40	17	37.0	37.0	65.2
	41-50	16	34.8	34.8	100.0
	Total	46	100.0	100.0	
EDU	TVET	3	6.5	6.5	6.5
	Diploma	5	10.9	10.9	17.4
	Degree	27	58.7	58.7	76.1
	Masters	11	23.9	23.9	100.0
	Total	46	100.0	100.0	

4.2. Respondents' response on the personal related factors

Table 4.2, shows the results of the distributed questionnaires in regarded to personal factors that contributed to the implementation challenge of School Management Information System (SMIS) technology in secondary school of Alem-Gebeya town administration, which is located in Silte zone, Central-Ethiopia regional state, Ethiopia.

Table4.1: shows that the response on influence of personal factors

Agreement scaling item		Frequency	Percent	Mean value	Standard Deviation
1/ The SMIS system is easy to use.					
Valid	Strongly Agree	10	21.7	2.65	1.337
	Agree	15	32.6		
	Neutral	8	17.4		
	Disagree	7	15.2		
	Strongly Disagree	6	13.0		
	Total	46	100.0	46	46
2/ The SMIS system will simplify our schoolwork.					
Valid	Strongly Agree	10	21.7	2.52	1.278
	Agree	18	39.1		
	Neutral	7	15.2		
	Disagree	6	13.0		
	Strongly Disagree	5	10.9		
	Total	46	100.0	46	46
3/ The SMIS system is flexible to interacting with it.					
Valid	Strongly Agree	12	26.1	2.11	1.038
	Agree	24	52.2		
	Neutral	6	13.0		
	Disagree	1	2.2		
	Strongly Disagree	3	6.5		
	Total	46	100.0	46	46
4/ Interacting with SMIS system is enjoyable to me.					

Valid	Strongly Agree	13	28.3	2.30	1.171
	Agree	16	34.8		
	Neutral	10	21.7		
	Disagree	4	8.7		
	Strongly Disagree	3	6.5		
	Total	46	100.0	46	46

(Source: survey data 2024)

According to the collected data shown as in the above table 4.2, the automated SMIS system was easy to use, it evident from the majority of respondents' responses when asked the questionnaire, "The SMIS system is easy to use", 10 (21.7%) and 15 (32.6%) strongly agreed & agreed respectively whereas 6 (13.0 %) & 7 (15.2 %) strongly disagreed, & disagreed while 8 (17.4 %) neutral.

The automated SMIS system would have simplified the respondents' their schoolwork, It evident that the majority of the respondents' response when asked the questionnaire, "The SMIS system will simplify our schoolwork", 18 (39.1 %) agreed and 10 (21.7 %) strongly agreed whereas 5 (10.9 %) & 6 (13.0 %) strongly disagreed & disagreed respectively while 7 (15.2 %) neutral.

The SMIS system was flexible when respondents interacting with it, thus evident from the majority respondents' responses when asked the questionnaire, "The SMIS system is flexible to interacting with it", 24 (52.2 %) agreed and 12 (26.1 %) strongly agreed whereas 3 (6.5%) and 01 (2.2 %) strongly disagreed & disagreed respectively while 6 (13.0 %) were undecided.

The respondents were opinion that of interacting with the SMIS system was enjoyable to them, it evidenced from the majority respondents' responses when asked the questionnaire, "Interacting with the SMIS system is enjoyable to me", 16 (34.8 %) agreed and 13 (28.3 %) strongly agreed whereas 3 (6.5 %) and 4 (8.7 %) strongly disagreed & disagreed respectively while 10 (21.7%) neutral.

4.3. Respondents' response on the external related factors

Table 4.3, shows the results of the distributed questionnaires in regarded to internal factors that contributed to the implementation challenge of School Management Information System (SMIS) in secondary school of Alem-Gebeya town administration, Central-Ethiopia regional state, Ethiopia.

Table 4.2: shows internal factors contributed to the implementation of (SMIS)

Scaling items		Frequency	Percent	Mean Value	Sta. Devi
1/ The reliability & usability of the SMI will trustful for the school's task management					
Valid	Strongly agree	19	41.3	1.89	1.100
	Agree	21	45.7		
	Neutral	1	2.2		
	Disagree	2	4.3		
	Strongly Disagree	3	6.5		
	Total	46	100.0	46	46
2/ The automated equipment of the SMIS technology will tri-ability in the school level					
Valid	Strongly agree	17	37.0	1.91	1.029
	Agree	23	50.0		
	Neutral	1	2.2		
	Disagree	3	6.5		
	Strongly Disagree	2	4.3		
	Total	46	100.0	46	46
3/ implementing the produced SMIS's technological tool in our school will minimize cost.					
Valid	Strongly agree	16	34.8	2.20	1.327
	Agree	19	41.3		
	Neutral	3	6.5		
	Disagree	2	4.3		
	Strongly Disagree	6	13.0		
	Total	46	100.0	46	46
4/ Implementing the SMIS technological tool will enhance school & data management.					

Valid	Strongly agree	13	28.3	2.41	1.392
	Agree	19	41.3		
	Neutral	3	6.5		
	Disagree	4	8.7		
	Strongly Disagree	7	15.2		
	Total	46	100.0		
5/ Reporting the school data through the automated SMIS technology it will punish the school's politically situation, (hint: finance audit, students' dropout, bureaucratic issues).					
Valid	Strongly agree	17	37.0	1.91	1.029
	Agree	23	50.0		
	Neutral	1	2.2		
	Disagree	3	6.5		
	Strongly Disagree	2	4.3		
	Total	46	100.0		
6/ The school leaders' change of rotation influence implementation of the SMIS technology					
Valid	Strongly agree	19	41.3	1.89	1.100
	Agree	21	45.7		
	Neutral	1	2.2		
	Disagree	2	4.3		
	Strongly Disagree	3	6.5		
	Total	46	100.0		

(Source: survey data 2024)

From the above table 4.3, the reliability & usability of the produced (SMIS) technology would have acceptance for the transformation of the selected school's task management. It evidenced that the majority of respondents' response when asked the questionnaire, "The reliability & usability of the produced (SMIS) technology will trustful for the school transformation", 21 (45.7%) agreed and 19 (41.3%) strongly agreed whereas, 3 (6.5%) and 2 (4.3%) strongly disagreed & disagreed while 1 (2.2%) neutral.

The produced SMIS technology would have tri-ability in the school, it evident that majority of the respondents' response when asked the questionnaire, "The produced SMIS technology would

have trial ability in the school level”, 23 (50.0%) agreed & 17 (37.0%) strongly agreed whereas 3 (6.5%) & 2 (4.3%) disagreed and strongly disagreed while, 1 (2.2%) decided to neutral.

From majority of the respondents’ response when asked the questionnaire, “implementing the produced SMIS’s technological tool in our school will minimize cost”, 19 (41.3%) agree & 16 (34.8%) strongly agreed and 6 (13.0 %) & 2 (4.3%) strongly disagreed and disagreed respectively while, 3 (6.5%) neutral.

From the majority of the respondents’ response when asked the questionnaire, “Implementing the SMIS’s technological tool will enhance school & data management”, 19 (41.3%) agreed & 13 (28.3%) strongly agreed whereas the Seven (15.2 %) & 4 (8.7%) strongly disagreed and disagreed respectively while 3 (6.5%) neutral.

According to collected data the majority of the respondents’ response when asked the questionnaire, “Reporting the school data through the automated SMIS technology will punish the school’s political situations, (hint: finance audit, students’ dropout, and bureaucratic issues)”, 23 (50.0%) strongly agreed and 17 (37.0%) agreed whereas 3 (6.5%) disagreed & 2 (4.3%) strongly disagreed while, 1 (2.2%) decided to neutral.

From the majority of the respondents’ response when asked the questionnaire, “The school leaders’ change of rotation influence implementation of the SMIS technology”, 21 (45.7%) agreed, & 19 (41.3%) strongly greed whereas 3 (6.5%) & 2 (4.3%) strongly agreed and agreed while the remain 1 (2.2%) participant decided to neutral.

4.4. Respondents’ response on the external related factors

From the table 4.4 given below, it is evident that the Sankura High School in Alem-Gebeya town administration has had faced external factors that contributed to the implementation challenge of the automated School Management Information System (SMIS) technology.

Table, 4.3: shows external factors measurement indicators

Scaling items		Frequency	Percent	Mean Value	Stan. Devi
1/ Implementation of the SMIS technology has been officially mobilized in the schol					
Valid	Strongly agree	4	8.7	3.93	1.357
	Agree	6	13.0		
	Neutral	1	2.2		
	Disagree	13	28.3		

	Strongly Disagree	22	47.8		
	Total	46	100.0	46	46
2/ Implementation of the automated SMIS system has motivated by lower, middle and top level educational leaders in the school.					
Valid	Strongly agree	5	10.9	3.91	1.347
	Agree	3	6.5		
	Neutral	4	8.7		
	Disagree	13	28.3		
	Strongly Disagree	21	45.7		
	Total	46	100.0	46	46
3/ There are unique official standards that align proper use of SMIS system in the school					
Valid	Strongly agree	1	2.2	4.17	0.950
	Agree	2	4.3		
	Neutral	5	10.9		
	Disagree	18	39.1		
	Strongly Disagree	20	43.5		
	Total	46	100.0	46	46
4/ NGO has supported to facilitating implementation of the SMIS technology in the school					
Valid	Strongly agree	7	15.2	3.67	1.5.06
	Agree	6	13.0		
	Neutral	1	2.2		
	Disagree	13	28.3		
	Strongly Disagree	19	41.3		
	Total	46	100.0	46	46
5/ There is an organized team to coordinate the implementation of SMIS in the school.					
Valid	Strongly agree	1	2.2	4.33	1.212
	Agree	7	15.2		
	Neutral	1	2.2		
	Disagree	4	8.7		
	Strongly Disagree	33	71.7		

	Total	46	100.0	46	46
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(Source: survey data 2024)

Table 4.4, shows the results of the distributed questionnaires in regarded to external factors that have contributed to the implementation challenge of the automated School Management Information System (SMIS) technology in the selected secondary school context. Implementation of the automated School Management Information System (SMIS) technology not officially mobilized in the selected school. It is evident that the majority of the respondents' response when asked the questionnaire, "Implementation of the automated SMIS technology has been officially mobilized in the school", 22 (47.8%) strongly disagreed & 13 (28.3%) disagreed whereas 6 (13.0%) & 4 (8.7%) agree and strongly agree respectively while 1 (2.2%) participant decided to neutral.

Implementation of the automated SMIS system have not motivated by lower, middle and top level educational leaders in the selected school. It evident from the majority of respondents response when asked the questionnaire, "Implementation of the automated SMIS system has motivated by lower, middle and top level educational leaders in the school", 21 (45.7%) strongly disagreed & 13 (28.3%) disagreed whereas 5 (10.9%) & 3 (6.5%) strongly agreed and agreed respectively while 4 (8.7%) decided to neutral.

There have no unique established official standards that align proper use of the SMIS system in the selected school. It evidenced from the majority of respondents' response when asked the questionnaire, "There are unique official standards that align proper use of the SMIS system in the school", 20 (43.5%) strongly disagreed & 18 (39.1%) disagreed whereas 2 (4.3) & 1 (2.2%) agreed and strongly agreed respectively while 5 (10.9%) neutral.

NGO has not support and facilitate implementation of the automated system rather purchased and placed the product in the selected school. It evidenced from the majority of respondents' response when asked the questionnaire, "NGO has supported to facilitating implementation of the automated SMIS technology in the school", 19 (41.3%) strongly disagreed & 13 (28.3%) disagreed whereas 7 (15.2%) & 6 (13.0%) strongly agreed and agreed respectively while 1 (2.2%) neutral.

There is no organized team to coordinate the implementation of the SMIS system in the selected school as the study subject. It evidenced from the majority of respondents' response when asked the questionnaire, "There is an organized team to coordinate the implementation of the SMIS

system in the school”, 33 (71.7%) strongly disagreed and 4 (8.7%) disagreed whereas 7 (15.2%) & 1 (2.2%) agreed and strongly agreed while the remain 1 (2.2%) neutral.

4.5. Discussion of the study

This section discusses the basic information derived from analysis of each variable presented through descriptive statistics. The quantitative data collection tool has two parts; which were appendix-A, and appendix-B, appendix-A, has two main parts. Part 1: has designed to collect demographical information of the respondents that means their Gender, Age and Education level. Part 2 designed to collect data about socio-economic related personal, internal and external factors contributing to the implementation challenge of the School Management Information System (SMIS) technology, which also contained 15 questionnaires as measurement items.

Appendix-B included 03 interviewed questions for key informants personal interviewee about the sources of contributing factors, effects of the challenges and investigations would be made to address the implementation challenges of School Management Information System (SMIS) with some sort of suggested and a recommended solution had included would have help to amended corrections at the next works.

All items (except part one) have measured on a five-point Liker-type scales ranging from "Strongly agree". "Agree", "neutral", "disagree", and "strongly disagree". Presents and interprets the findings of qualitative data analysis obtained from the interview to answer research question based on the finding of the research in the study area.

4.5.1. The response rate of the target people and the return rate of all questionnaires

This section presents the response rate of the target people and the return rate of all distributed questioners. The response rate of the target people is the proportion of all the selected people who completed the survey parameter and helps in the understanding in the validity of the survey and sources of non-response error. At the time of the data collection, the sizes of the population have been 46 in numbers, respondents who were 35, and 11 chosen from the selected school's academic and administrative staffs respectively. To collect required data about implementation challenge of School Management Information System (SMIS) in the selected secondary school the questionnaires had distributed to all these potential respondents. Out of 46 respondents 46 (100%) were returned the questionnaires. Hence, the analysis and interpretation of the

respondents were carried out based on 46 (100%) of the collected questionnaires which has been wonderful acceptance for this study.

Which is wonderful acceptances representative as recommended by Wubnesh Mati and [Bryman, 2004](#)) studies, claims that response rate of more than 92.9 and 70% respectively Very-Good and Good for generalization[7].

4.5.2. The respondents demographic information

According to the collected data shown in the table 4.1, the gender characteristics were observed that the majority of the respondents were Male 39 (84.8%), while small proportions 7 (15.2%) were Female respondents. There were male respondents in the study than female because of a small-numbered female staffs had placed at the selected secondary school level in the study area. This indicates that here are more Men, within the implementation challenge of School Management Information System (SMIS) system in the study area.

According to “Arumugam Raman, SAGE 2019” study, stated that gender played a critical role in technology integration. On the other hand, female technology leaders were more effective compared with male technology leaders in Turkey, especially in the visionary leadership construct. The results of the study depicted a gradual closure of the gender gap among technology leaders, as both male and female leaders are able to carry out the international standards technology evaluation ([ISTE, 2014](#)) standards for technology leaders.

The findings of this study contradicts with the study carried out by ([Arumugam Raman, SAGE-2019](#)), proved that female technology leaders were more effective compared with male technology leaders in the study area.

During the survey, the participant in the study usually determines his/her attitudes, potential skills and experience based on his/her age level. According to the collected data shown as in the table 4.1, in the ages group brackets 13 (28.3%) of respondents fall in [18-30], 16 (34.8%) were fall in [41-50] and 17 (37.0%) fall in [31-40].

These indicate that the higher confidence, experienced and adaptability aged group respondents were contributed to the implementation challenge of School Management Information System (SMIS) hinders the automation of school activities in the study area.

As ([Korpinen, & Gobba, 2014](#)) study, research often finds that younger users fall in the [18-40] age groups tend to have higher confidence and adaptability when using technology, while older

age groups fall in the [41-50] may experience more hesitation (faltering in speech) but can gain confidence with increased exposure and use.

Education level has been one element asked as the respondents' demographic information.

According to the collected data, shown as in the above the table 4.1, all staffs consider themselves as literate since there is zero illiteracy 27 (58.7%) of respondents have degree, 11 (23.9) have Masters Degree, 5 (10.9) Diploma holder 3 (6.5) TVET college graduated and none had other qualification.

The high percentage of the respondents with degree & master degree in university education attributed to the fact that the Sankura High School's most of its staff members must have the minimum qualification as set by employer. Education was not affect the tendency of person contributed to the implementation challenge of School Management Information System. It is evident that all respondents consider themselves literate since there is a zero (0) percent illiteracy in the study area.

As (Degif Teka, MIS-2008) study shows that good education qualification is base for chance of using modern technology.

The same is correct the respondents have good coverage of educational background in the study area education was not affect the tendency of participants contributed to the implementation challenge of School Management Information System.

4.5.3. The socio-economic related factors (Personally, Internally, and Externally)

The researcher observed that; during the utilization-focused assessment, the school respondents resulted in well attracted to operational process using SMIS system in the study areas.

To determine sources or subjects of the problems starting with rating the produced SMIS's relative advantage, compatibility, complexity, trial ability equivalently the selected school staffs' perceptions toward ease of use, usefulness and attitudes toward availableness of the system.

Theories and models helped as a benchmarked which help to examine sources of factors contributing to the implementation challenges of the system and to identify detects. The items presented in a liker type scales, (1-5) with, (1 = strongly agreed, 2 = agreed, 3 = neutral, 4 = disagreed and 5 = strongly disagreed).

For the purpose of analysis, the mean values were interpreted as from 1.0-1.49 = very low, 1.50-2.49 = low, 2.50-3.49 = medium, 3.50-4.49 = high, and 4.50-5.00 = very high[7].

According to the collected data in item, one from table 4.2, shows that the mean values of the respondents' response was 2.65, which considered as medium level of agreement regard to the idea "The SMIS system is easy to use", This indicated that the SMIS system was simple to used. Somehow, the selected school staffs have poorly perceived toward the easy fullness of automated SMIS system to use it in the study area. From utilization-focused evaluation and observation check list the researcher observed that the easefulness of the SMIS system when respondents login to the system, enter data and view, edit and retrieve some sampled data in the study area.

From item 2, shown as table 2.52, the mean value of respondents was 2.52, thus considered as medium levels of staff's agreement regarded "The SMIS system will simplify our schoolwork", this indicates that the automated SMIS system would have simplify their school works, thus evidenced on the utilization focused evaluation their adoption rates in the study area. It shows that the school staffs have been misplaced attention toward the benefits of implementing SMIS system in the study area.

It strengthen the previous study, (Timothy Serem Kiptoo, mis-2013), MIS study, regard to personal factors on adoption of computerized management information systems in Kenya TVET collage, that confined that majority of the respondents felt that information systems would have ease their work, 93(62.00%) strongly agreed while 37(24.67%) agreed. On the other hand, few respondents were of the opinion that MIS do not ease their work, 3(2.00%) and 6(4.00%) disagreed and strongly disagreed respectively while 11(7.33%) were undecided.

The item 3 in the table 4.2 shows that the mean value of the response was 2.11, thus considered as also low level of staffs' agreement regarding to "The SMIS system is flexible to interacting with it". This indicated that, the produced SMIS technology flexible to interact it. It shows that the school staffs have been frustrated and poor perception toward interfering with staffs potential skill and the school job contents in the study area.

The same is true as (Timothy Serem Kiptoo, MIS), adoption study finding Majority of the respondents' opinion that information systems has been flexible to interact with. 64(42.67%) strongly agreed and 57(38.00%) agreed whereas 10(6.67%) and 12(8.0%) disagreed and strongly disagreed respectively while 7(4.67%) were undecided.

The item 4, in the table 4.2 shows that the mean value of the response was 2.30, thus considered as low level staffs agreement regarding, "Interacting with SMIS system is enjoyable to me". This indicated that the produced SMIS system is enjoyable for its user when interacting it. From

utilization-focused evaluation, the researcher confined that the produced SMIS system was not frustrated the respondents' and the system interfered with their schoolwork. It shows that the school staffs have poor perceptions toward compatibility and interference of the produced system in the study area.

The same is true as (Timothy Serem Kiptoo, MIS-2013) conducted study finding result evident that respondents were the opinion that interacting with MIS (ICT) tool is not frustrating. When asked so, 8(5.33%) and 20(13.33%) strongly agreed and agreed respectively that MIS use is frustrating whereas 72(48.00%) and 30(20.00%) disagreed and strongly disagreed respectively while 20(13.33%) were undecided.

As shown item one from table 4.3, regard the idea "The reliability & usability of the produced (SMIS) technology will trustful on the school works". The mean value of the respondents' response was 1.89, which considered as low level of agreement. It indicated that the reliability & usability of the automated SMIS would have trustful for the selected secondary school works. From the utilization-focused evaluation, the researcher observed that the produced system technology surely has not been usability issues (problems) on the school works. On the other hand in the selected school the system has been disservice, thus somehow resulted on the staffs loses trusted on usability & reliability of the SMIS system technology in the study area.

This idea strengthen by (Behnam et al) conducted study as If a system has usability issues, its efficiency and effectiveness will be reduced. As a result, it will discourage the user from using it since it is likely that the user will lose trust in the reliability and usability of the system[26].

Item two in the table 4.3, shows that the mean value of the respondents' response was 1.91, regard "The automated equipment of the SMIS technology will tri-ability (attempt) in the school level" thus considered as low level of staffs agreement. It can be simple to attempts on schools level. It evidenced from on utilization-focused evaluation the researchers observed that when the respondents trying (attempting) to retrieving data and view some reports through using the automated SMIS system in the study area. It indicated that the automated SMIS system would have require attempter school. It shows that the implementation of the automated SMIS system had not attempted by the selected secondary school.

The same is TRUE, according to Schifter et al schools are no longer able to choose not to use data from school management information systems when making decisions, as a reason its

impact on lacked in practice. The utilization of SMIS further hampered by insufficient professional development, training, or support systems [13].

Item three in the table 4.3 shows that the mean value of the respondents' response was 2.20 regard to "implementing the SMIS's technological tool will helps to minimize costs for the school task management" this considered as low level of the school staffs agreement. It indicated that the selected school/staffs have been miss place attention to the relative advantages of implementing the SMIS system.

Item four in the table 4.3 shows that the mean value was 2.41 regarded to "The SMIS system will ease the school's complex works" it considered as low level of staffs agreement. From this ensured that, the SMIS system would have ease complex the work in the study area. The school managements have not support and given attention for its implementation.

This study finding also complained with the results of (Timothy Serem Kiptoo, MIS), MIS adoption study, as when asked whether the administration was fully supported the implementation of MIS, 69(46.00%) agreed while 37(24.67%) strongly agreed. On the other hand 14(9.33%) and 17(11.33%) disagreed and strongly disagreed respectively while 13(8.67%) were undecided. It clearly shows that TVET collage administration fully supported the implementation of MIS[1].

Item five in the table 4.3 shows that the mean value was 1.91, accordance to the idea "Reporting data through using the automated SMIS technology it will punish the school's politically situation", (hint: finance audit, students dropout, pass &fail, bureaucratic). It considered as low level of the school staffs' agreement. It indicated that the selected school considered as reporting data through using the automated SMIS technology thus would punish the school's politically situation,

Item six in the table 4.3 shows that the mean value of reason was also 1.89, regard "The school leaders' change of rotation influence implementation of the SMIS technology" it considered as low level of respondents agreement. It shows that the successful implementation of the SMIS system somehow influenced by the school /educational leaders' change of rotation (promotion or demotion) in the study area.

As shown item one in the table 4.4, on the idea "Implementation of the SMIS technology has been officially mobilized in the school", the mean value of the respondents' response was 3.93, which considered as high level of agreement on the idea, it indicated that Educational officials

have not mobilized the implementation of SMIS system at the selected school level. It shows that the automated SMIS system disservice on large-scale numbered secondary school and the expanse of implementation not extends to the secondary school especially, in the study area.

Moreover, as (Ashenafi Tesfaye's, EMIS-2016), study, it was analyzed through interview there was no mobilization based training given on computer application for these administrative staff. Training given only by interest of the authority personal; the interest of worker did not assessed however, the problem was there. Work procedures and task management at school level were treated.

According to (Waweru) lack of understanding and appreciation by the concerned educational officials and staff in the use and application of EMIS[16].

As researcher study result thus, challenging problems have also been confirmed, during personal interviews of the study and as a solution the secondary school, both academic and administrative staffs would have practicing again and again through ownership based sense of implementing the automated SMIS system, especially in the study area.

Item two in the table 4.4 shows that, the mean value of the respondents' response was 3.91, which considered as high level of agreement on the idea "Implementation of the automated SMIS system has motivated by lower, middle and top level educational leaders in the school". It indicated that implementation of the automated SMIS system yet not motivated by any of them educational leaders at the selected school context.

Item three in the table 4.4, shows that the mean value of the respondents' response was 4.17, regarding "There are unique official standards that align proper use of SMIS system in the school", which considered as high level of the agreement on such idea. It indicates that, there have not unique official standards that align proper use of SMIS system at secondary school level, especially in the study area. From this concluded that, no established and applicable unique standards that align proper use of SMIS system in school level. Thus created opportunity to functionality ranging school b/n them.

As (Waweru), also a number of problems affect the establishment of a functional Education Management Information System (EMIS). no clear-cut standard to be observe in the collection, submission, processing and utilization of data; lack of understanding and appreciation by the concerned education officials and staff in the use and application of Education Management Information System (EMIS); data are not clearly defined and not regularly collected[16].

As (UNESCO) ineffective institutional frameworks, leadership and management cause inefficiencies and contribute to the deterioration of trust in products of the national statistical system. EMIS is internally accountable for activities such as technical data collection; data entry, data processing, producing data reports and meeting ad hoc report requests. The term "external accountability" covers the duties that other units have to Education Management Information System (EMIS)[7],

In this study's as key informants personal interviewed feedback the biggest challenged problems for the implementation gap of SMIS in the secondary school had no established and regulated polices standards, rules and cultures, especially in the study area. Thus might created opportunities to motives the traditional way of manual-based management system. Also as interviewers recommended suggestions, external parities and top level officials managements would have exerted important forces to success implementation of SMIS system in the study area.

Item four in the table 4.4, shows that the mean of the response was 3.67, regarding "NGO has supported to facilitating implementation of the SMIS technology in the school", which considered as high level of the agreement on such idea. It indicated NGO's have not support capacitating staffs technical skills in the school level. It shows that NGO is not supporting continuation of extending SMIS system implementation toward secondary school contexts, which created opportunities be secured budget in the school. If budget is secured, ownership-based sense of utilizing the system would have important in the school level.

This study contradict with the finding of previous Timothy Serem Kiptoo, (MIS-2013) study, on whether there are private enterprises supporting implementation of MIS, 35(23.33%) and 48(32.0%) strongly agreed and agreed respectively whereas 18(12.0%) and 47(31.33%) disagreed and strongly disagreed respectively. A small proportion of respondents (1.33%) were undecided[1].

If budget is secured what shall? Now, as interviewers' suggestion to intervention made to address the challenges as a solution, interviewers given as "ownership based sense of implementation of SMIS" is best way to automate the secondary school activities at all.

Thus, also, strengthen by study As Y. Kurniawan and A. Andika, (SMIS-2019), only when school staff members develop an ownership-based attitude would be the full potential of SMIS implementation be achieved, and this can only happen when funding is secured. By giving the

appropriate people access to the relevant information at the right moment to enable them to make the best decisions, information management by computer technology offers technical assistance to school educational systems[19].

Item five in the table 4.4, shows that the mean of the response was 4.33, regarding “There is an organized team to coordinate the implementation of SMIS in the school”, which considered as high level of the respondents disagreement on such idea. It indicated that, there is no organized, string committee, teams to coordinate the implementation of SMIS in the study area.

As interviewers’ responded feedbacks and suggested recommendations, as a solution, the secondary school would have establishing and organize teams as string committees and properly apply it success full implementation of the automated SMIS system in the study area.

The benefits of organizing Teams, motivated, as previous studies (ESHETU MANDEFRAWS, EMIS)” and (MoE), such that In Ethiopia, Educational Management Information System and Information Communications Technology (EMIS-ICT) Directorate organized in three teams. Those are EMIS Team, ICT Experts Team and ICT Support Team. Main duties of EMIS and ICT Directorates have responsive to collect and organize, education data, prepare Annual Education Statistics, deliver education related data for decision makers and users, and give technical support on ICT related issues[17].

As a result, the EMIS procedure has allowed to grow at all levels of education, and the federal government reorganized as (ICT & EMIS Directorate) in 2015. This shift, which increases the authority and responsibility of regional education bureaus, woreda, and schools, level it has, been implement Oromia education system (OEB)[17].

Also according to the Ethiopian MoE, School Management Information System (SMIS) would have operated at the school level and when fully established can replace the annual school survey by linking to EMIS with SMIS would support school leaders to collect, record, and analyses school performance data. SMIS would focus on schools level performance data, related activities implemented by school leaders. School leaders have started to make use of information systems in the gradually increasing daily management staffs[17].

As (WUBNESH MATI, EMIS) study the EMIS and ICT teams of the Oromia Regional State have merged into a single directorate in 2019 and are now in charge of all EMIS responsibilities, such as report writing, data gathering and analysis, publishing annual education abstracts, and distribution to all relevant parties [6].

4.6. Research models and conceptual frame work

The conceptual framework shows that the implementation and application of produced the School Management Information System (SMIS) technology in the selected secondary school academic & administrative task management influenced by the personal, internal or school and external related several key factors. Such that contributing to the successful adoption, utilization and implementation challenge of the School Management Information System (SMIS) technology in the selected secondary school of Alem-Gebeya town administration, Silte zone,. The study would explore how these factors affect the gap and provide recommendations for minimizing it. This framework helps guide this research by focusing on how these variables interact and managed to the observed implementation challenge of the School Management Information System (SMIS): the case of Alem-Gebeya town public secondary school context in Central-Ethiopia regional state, Ethiopia, for more information the research model shown as in the figure 4.1 below in the next page.

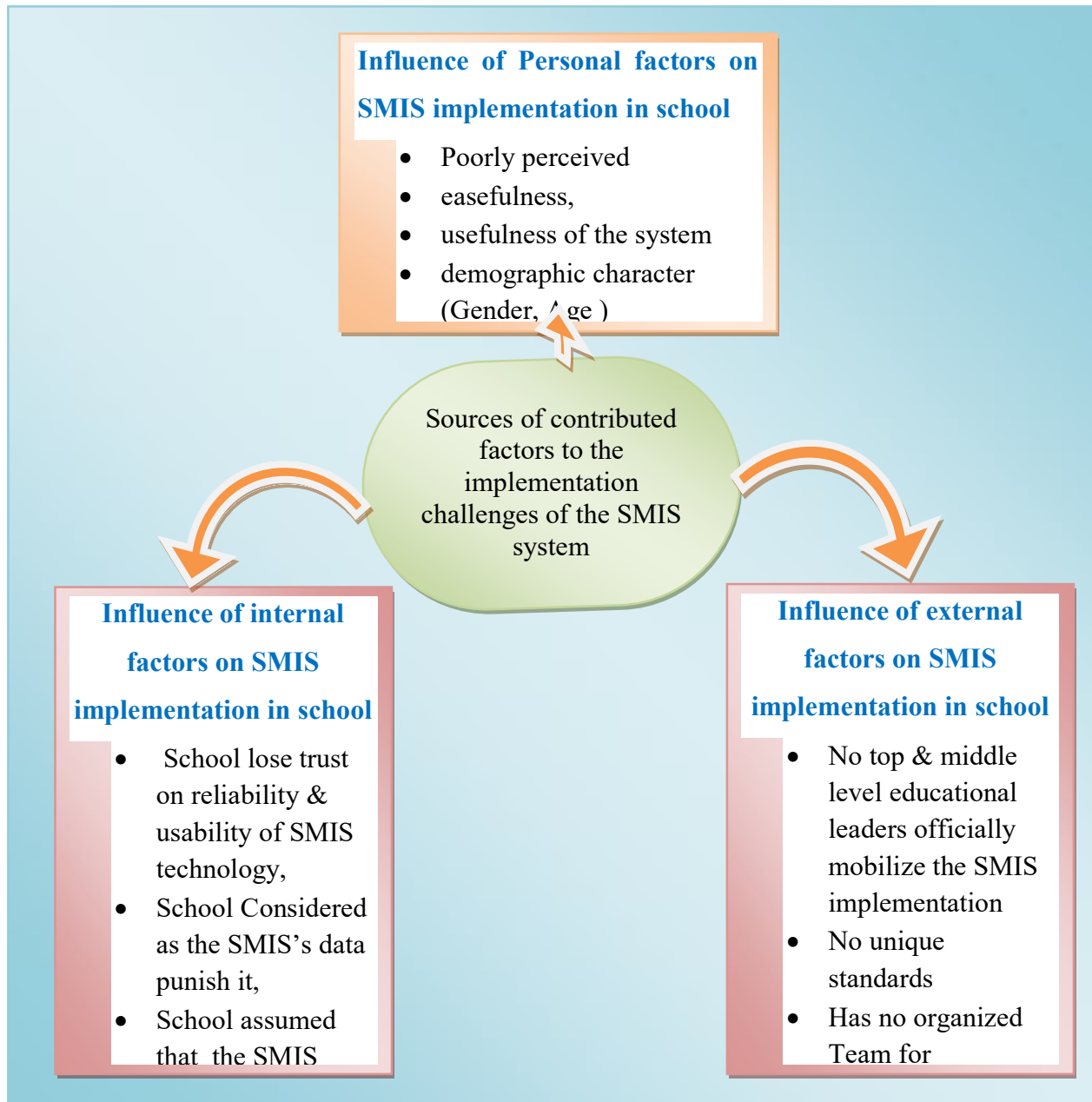


Figure 4 1: shows this research model

Source: researcher (Wabela .k, 2024)

CHAPTER FIVE

5. SUMMARY OF KEY FINDINGS, CONCLUSIONS, RECOMMENDATIONS AND FUTURE WORKS

5.1. Summary of Key Findings

Now the purpose of this study was to investigate the factors that contribute to the implementation challenge of the School Management Information System (SMIS) technology in secondary school of Alem-Gebeya town administration.

To get such purpose important to remember the following three basic research questions: (1) what are the sources of factors those contributing to the implementation challenge of the School Management Information System (SMIS) in the study area? (2) How to determine the influences of personal, internal and external related factors those contribute to the implementation challenge of the School Management Information System (SMIS) in the study area? & (3) How to investigate personal, internal and external related factors those contribute to the implementation challenge of the School Management Information System (SMIS) in the study area?

The findings are start to presenting the respondents' demographic characteristics based on this the collected data shown in the table 4.1, the gender characteristics were observed that the majority of the respondents were Male 39 (84.8%), while small proportions 7 (15.2%) were Female respondents. There were male respondents in the study than female because of a small-numbered female staffs had placed at the selected secondary school level in the study area. This indicates that here are more Men, within the implementation challenge of School Management Information System (SMIS) system in the study area.

During the survey, the participant in the study usually determines his/her attitudes, potential skills and experience based on his/her age level. According to the collected data shown as in the table 4.1, in the ages group brackets 13 (28.3%) of respondents fall in [18-30], 16 (34.8%) were fall in [41-50] and 17 (37.0%) fall in [31-40]. These indicate that the higher confidence, experienced and adaptability aged group respondents were contributed to the implementation challenge of School Management Information System (SMIS) hinders the automation of school activities in the study area.

Education level has been one element asked as the respondents' demographic information. According to the collected data, shown as in the above the table 4.1, all staffs consider themselves as literate since there is zero illiteracy 27 (58.7%) of respondents have degree, 11 (23.9) have Masters Degree, 5 (10.9) Diploma holder 3 (6.5) TVET college graduated and none had other qualification.

The high percentage of the respondents with degree & master degree in university education attributed to the fact that the Sankura High School's most of its staff members must have the minimum qualification as set by employer. Education was not affect the tendency of person contributed to the implementation challenge of School Management Information System. It is evident that all respondents consider themselves literate since there is a zero (0) percent illiteracy in the study area.

The others are the influences of socio-economic related factors (Personally, Internally, and External) contributed to the implementation challenges of SMIS technology in the selected secondary school. The researcher observed that; during the utilization-focused assessment, the school respondents resulted in well attracted to operational process using SMIS system in the study areas. To determine sources or subjects of the problems starting with rating the produced SMIS's relative advantage, compatibility, complexity, tri-ability equivalently the selected school staffs' perceptions toward ease of use, usefulness and attitudes toward availableness of the system.

According to the collected data, the SMIS system was simple to use. Somehow, the selected school staffs have poorly perceived toward the easy fullness of automated SMIS system to use it in the study area.

The produced SMIS technology flexible to interact it, while the school staffs have been frustrated and poor perception toward interfering with staffs potential skill and the school job contents in the study area.

The researcher confined that the produced SMIS system was not frustrated the respondents' and the system interfered with their schoolwork, this means it is enjoyable. It shows that the school staffs have poor perceptions toward compatibility and interference of the produced system in the study area.

The reliability & usability of the automated SMIS would have trustful for the selected secondary school works. From the utilization-focused evaluation, the researcher observed that the produced

system technology surely has not been usability issues (problems) on the school works. On the other hand in the selected school the system has been disservice, thus somehow resulted on the staffs loses trusted on usability &reliability of the SMIS system technology in the study area.

The SMIS technology has been simple to attempts on schools level. It indicated that the automated SMIS system would have require attempter school. This indicated that the implementation of the SMIS system had not attempted by the selected secondary school level.

Implementing the SMIS's technological tool would have helpful to minimize costs for the selected school's task management, while the selected school has been miss place attention to the relative advantages of implementing the SMIS system.

The selected school considered as that of reporting data through using the automated SMIS technology would punish their political situation (hint: finance audit, students dropout, pass &fail, bureaucratic).

The successful implementation of the SMIS technology, somehow influenced by the school / or educational leaders' change of rotation (promotion or demotion) in the study area.

Educational officials have not mobilized the implementation of SMIS system at the selected school level. It shows that the automated SMIS system disservice on large-scale numbered secondary school and the expanse of implementation not extends to the secondary school especially, in the study area.

Implementation of the SMIS technology yet not motivated by lower, middle, and top-level educational leaders at the selected school.

There have not unique official standards that align proper use of SMIS system at secondary school level in the study area. From this concluded that, no established and applicable unique standards that align proper use of SMIS system in school level. Thus created opportunity to ranging b/n planned objective and actual implementation of the system in the study area.

NGO has not supporting continuation of extending SMIS system implementation toward the selected secondary school contexts, which created opportunities be secured budget in the school. If there have no ownership-based sense of utilizing the system, NGO's would have important in the school level.

There has no organized team to coordinate the implementation of SMIS in the study area.

5.2. Conclusions of the Study

The fact that the complete package of the integrated School Management Information System (SMIS) modules application software product tool distributed at many facilitated secondary schools of Central-Ethiopia regional states, including Alem-Gebeya town public secondary school. However there have implementation challenge of the produced School Management Information System (SMIS) technology in the public secondary school of Alem-Gebeya town administration and any researchers have not yet given attention within the topic implementation challenge of School Management Information System (SMIS): the case of Alem-Gebeya town public secondary school. Old and manually managing information may not offer enough help in gathered information management in the school but rather needs implementation of the produced automate school management information system (SMIS) technology. To solve such challenge this research done in the study area.

This research aimed at investigate the factors contributing to the implementation challenge of School Management Information Systems (SMIS) in public secondary school of Alem-Gebeya town administration and propose strategies to bridge this gap for enhanced educational management & would be continue serviceable that of cutting edged & disservice the produced automate School Management Information Systems (SMIS) technology especially in the study area. In this study descriptive survey research design with qualitative and quantitative research approaches had used. Hence, the gathered data collected from 46 sampled respondents, which selected from selected secondary school's academic and administrative staffs.

Factors those contributed to the implementation of the School Management Information Systems (SMIS) technology in the selected school examined from respondents' demographic characteristics & socio-economic perspectives. Hence the results were described as follow.

The respondent's demographic characters (Gender, & Age) also influenced the implementation of the system while their education level has not affected it. The sources of socio-economic factors related to personal, internal and external factors contributed to the implementation challenge of the automated SMIS system in the study area.

The results of the major personal related factors shown as follow: Both staff type respondents have poorly perceived toward easefulness, usefulness of the system to use it and they have been misplaced attention to the implementation of the facilitated School Management Information System.

The results of the major internal (school) related factors shown as follow: the selected school has been loses trusted on the reliability & usability of the produced School Management Information System (SMIS) technology in the study area.

The SMIS technology would have highly tri-ability opportunity to attempters, while the selected secondary school has miss placed attention toward tri-abilities of the produced system.

Implementing the produced SMIS technology is the only best way for cost minimization on the school's task management procedures, while the selected school miss placed attention toward the system would assumed wastage of their costs in the task management procedures.

The school (educational) leaders' changes of rotations (may promotion or demotion) influenced the successful implementation of the School Management Information System (SMIS) technology in the peripheral area.

The results of the major external related factors shown as follow: Educational officials have not mobilized the implementation of SMIS system at the selected school level. It shows that the automated SMIS system disservice on large-scale numbered secondary school and the expanse of implementation not extends to the secondary school especially, in the study area.

Implementation of the SMIS technology yet not motivated by lower, middle, and top-level educational leaders at the selected school.

There have not unique official standards that align proper use of SMIS system at secondary school level in the study area. Thus created opportunity to ranging b/n planned objective and actual implementation of the system in the study area.

NGO has not supporting continuation of extending SMIS system implementation toward the selected secondary school contexts, which created opportunities be secured budget in the school. If there have no ownership-based sense of utilizing the system, NGO's would have important in the school level.

There has no organized team to coordinate the implementation of SMIS in the study area.

5.3. Recommendations

In doing this research, the researcher may face some problems. One of the problems related to: Source of data: data is very important to make deep investigation about the problem and to give concrete conclusion for the study.

The following are the findings of the study, it is clear that the implementation of SMIS system is important and beneficial in enhancing school academic and administrative tasks management process in the secondary school. In order to enable schools to automate their daily activities. The school both Staffs to be adopt and use new technologies at all levels of their operations. To do this, the paper recommends the following:-

The secondary school' academic and administrative staffs should take concrete corrections on their poor perceptions toward easefulness, usefulness and availableness of the automated SMIS system in the study area.

Schools should know the produced the SMIS technology surely has not usability issues (problems) on the school works, which means it is trust full for any school's task management procedures.

The automated SMIS system would have require attempter school hence schools should attempt to implement it in their task management procedures.

Schools should have take concrete corrections regard Implementing the SMIS's technological tool would have helpful to minimize costs on task management procedures.

Schools should take concrete corrections regard reporting data through using the automated SMIS technology will punish our school's political situation (hint: finance audit, students dropout, pass &fail, bureaucratic).

Any educational parity should take correction on misplaced attention about the school / or educational leaders' change of rotation (promotion or demotion) influenced Implementation of the SMIS technology in the study area.

The educational Officials in secondary the schools level should put standards that align proper use of SMIS system in school academic and administrative task management, should mobilize the implementation of SMIS system at all secondary schools, especially in the study area.

The school staffs, educational official must uses educational data/information and services only through automated SMIS system in all secondary schools level.

In addition, officials and schools should establish organized SMIS teams/committees in school level up to officials.

5.4. Future works

This research paper was mainly focused examined and investigated factors those contributed to the implementation challenge of the automated SMIS system in the secondary school of Alem-Gebeya town in Silte zone Central-Ethiopia regional state, Ethiopia for enhanced the efficiency functioning of school leadership and services process. This study focused mainly about the sources of contributing factors, its effects and interventions made to effort to address the challenges, to the implementation challenges of the SMIS system in the secondary school context. Therefore, the other issues that have not consisted by this study are remained for further studies to show the other researcher the direction in which they can focus if they want to (examine) on the same topic. Thus the focused areas were personal, internal (institutional) and external factors contributing to the implementation challenge of the produced SMIS technology in the secondary school. It has on the mentioned context demographical, & socio-economic factors related to poorly perceived to easefulness, usefulness of the system and other related influences.

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Department of Information Technology
Masters of Science (MSc) program in Information Technology

Appendix A: questioner

Questioner to be filling by both academic and administrative staffs' respondents

Dear respondents,

The main purpose of this questionnaire is to collect data on the Implementation challenge of SMIS: in the Case of the Alem-Gebeya Town secondary School. The researcher would have needs your response only for the successful accomplishment of this study. Before you fill, read all the questions and feel free to give your opinion because no response treated as wrong. Be sure that your responses will not be using for other, without academic purpose and kept confidential.

Thank you for your cooperation

Instruction:

1. You do not write your name on the paper.
2. Read all the instructions and questions before you answer the questions.
3. Answer the questionnaires based on your current school.
4. Please, tick mark “√” or “X” in the box in front of the questions. And, write your opinion briefly for the short answer questions on the space provided.

NB: - No need of writing your name

PART 1: - General Information Please insert tick mark (√) details or circle the appropriate category for you.

Name of your school -----

1. Sex: Male Female
2. Age: between 18-30 , 31-40 , 41-50 , above 50
3. Education level: TVET , Diploma , Degree , Masters , other

PART 2: Questionnaire

Hint: SA =Strongly-Agree, A =Agree, N =Neutral, D =Disagree, SD = Strongly-Disagree

On a scale of 1-5, indicate your levels of agreement or disagreement with the following statements with the regard personal, internal, and external factors to the implementation challenge of SMIS in your school.

Table of Appendix-A 1: Shows that 1-5 Likert scaled questions in the appendix

No	Section-1, Personal factors;	Strongly Agree (1)	Agree (2)	Undecided (3)	Disagree (4)	Strongly Disagree (5)
1	The SMIS system is easy to use.					
2	The SMIS system will simplify our schoolwork.					
3	The SMIS system is flexible to interacting with it.					
4	Interacting with the SMIS system is enjoyable to me.					
Section-2, Internal factors;						
1	The reliability & usability of the produced (SMIS) technology will trustful for the school transformation.					
2	The automated equipment of the SMIS technology will trial in the school level.					
3	Implementing the SMIS's technological tool, will helps to minimize costs for the school task management.					
4	The SMIS system will ease the					

	school's complex works					
5	Reporting data through using the automated SMIS technology it will punish the school's politically situation, (hint: finance audit, students result).					
6	The school leaders' change of rotation influence implementation of the SMIS technology					
Section-3, External factors						
1	Implementation of the SMIS technology has been officially mobilize in the school.					
2	Implementation of the automated SMIS system has motivated by lower, middle and top level educational leaders in the school.					
3	There are unique official standards that align proper use of SMIS system in the school.					
4	NGO has supported to facilitating implementation of the SMIS technology in the school					
5	There is an organized team to coordinate the implementation of SMIS in the school.					

Thank you!!!

Appendix B: Interview Questions

Hawassa University Institute of Technology Faculty of Informatics, Department of Information Technology

Dear Respondent: I am Master of Science (Msc.) student in Information Technology (IT) at Hawassa University Institute of Technology, Faculty of Informatics, and Department of Information Technology. Currently I conduct thesis research under the title: **Implementation challenge of SMIS: in the Case of the Alem-Gebeya Town secondary School**. I would like to hear your views on this. I hope that you will respond to all of the questions. This study requires that you complete an interview and I kindly request you to answer the interview with at most care and honesty. Your name and any of the information you provide would strictly confidential and will not attributed to the individual or organization. All responses will be stored in a secure environment. The results of this research used for academic purposes only. Your help greatly appreciated.

Section-1, Interview questions:

16. What are the sources of contributing factors to the implementation challenge of SMIS in the secondary school? Hint: personally, internally and externally

17. What problems have faced in the implementation challenge of SMIS in the secondary school?

18. What can you suggest the solution to reduce the level of implementation challenge of SMIS in the secondary school?

Section-2, Recommended suggestions,

19. Are you optimistic about the future of implementation of School Management Information System in your school level??

- YES,
- NO,
- Not Sure

20. Which mechanisms commonly better to enhance implementation of School Management Information System in your school level?

- Put standards and regulate,
- Every data be shared through SMIS, unless invalid,
- Be organize SMIS teams,
- All are important,
- Not Sure

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