EFFECTIVENESS OF EDUCATION MANAGEMENT INFORMATION SYSTEM ON MANAGEMENT OF SECONDARY SCHOOLS IN UASIN GISHU COUNTY, KENYA

BY

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DECLARATIONS

Declaration by the Student

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DEDICATION

I dedicate this work to my late wife Damaris. She would have been the happiest woman to learn about my achievement, unfortunately she is no longer with us, and may her soul rest in eternal peace. She continuously encouraged me to embark on my doctoral work. Her prayers and support gave me the impetus strength, motivation and courage to pursue my dream and realize my potential.

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ABSTRACT

The government of Kenya implemented policy that advocates for the adoption of Education Management Information Systems (EMIS) in education. The purpose of this study was to investigate the influence of EMIS on Management of public secondary schools in Uasin Gishu County, Kenya. The study was guided by the following specific objectives to: To establish the influence of EMIS for student information management on management of secondary schools, Assess the influence of EMIS for human resource management on management of secondary schools, Analyze influence of EMIS for curriculum and instruction on management of secondary schools, to evaluate the influence of EMIS for financial management on management of secondary schools and examine the influence of EMIS for safety and security management on management of secondary schools in Uasin Gishu County. The study was guided by the Unified Theory of Acceptance and Use of Technology (UTAUT) Davies, (2016). The study adopted pragmatic philosophical paradigm and employed explanatory-sequential design research design. The target population comprised of principals, deputy principals, Heads of Department, Sub-County Directors and County Director of Education (CDE). The accessible population for the study was 1334 respondents which included 183 principals, 189 deputy principals, 955 HODs in public secondary schools, 1 County Director and 6 Sub-County Directors of education Uasin Gishu County. Stratified proportionate sampling was used to select schools in each sub-county; purposive and simple random sampling was used to select principals, deputy principals, and heads of departments. Kerjcie and Morgan (1970) table was used for determining the sample size of 302 respondents. Closed-ended structured questionnaire were used to collect quantitative data from principals, deputy principals and heads of departments (HODs) while semi-structured interview schedules were used to collect qualitative data from sub-county directors and the County Director of Education. Internal validity was attained by increasing the sample size. The Cronbach's alpha results obtained from pilot study in Trans Nzoia County indicate that all the variable met the threshold of a minimum alpha 0.70 which was considered reliable for the study. Quantitative data was analyzed using descriptive and inferential statistics while Qualitative data was analyzed in narratives and themes. Results of data analysis were presented using tables, bar graphs and pie charts. From the findings, the value of adjusted R squared was is 0.755, an indication that there was a variation of 75.5% on the management of public secondary schools in Uasin Gishu County due to effectiveness and efficiency of EMIS. There was a significant association between EMIS and management of public secondary schools with F statistics (162.124). Regression coefficients of student information management, human resource management, curriculum and instruction, financial management, safety and security were 0.146, 0.234, 0.225, 0.086, 0.078 with $P<0.05$ respectively. Based on Unified Theory of Acceptance and Use of Technology, effectiveness and efficiency of EMIS remains fundamental in enhancing management of public secondary schools. Therefore, all the elements of EMIS should be improved on and their implementation strengthened through a policy framework by the ministry of education and public secondary school management to enhance the effectiveness of management of secondary schools.

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LIST OF ABBREVIATIONS AND ACRONYMS

APA	American Psychological Association
ANPR	Automatic Number Plate Recognition
BOM	Board of Management
CCTV	Closed-Circuit Television
CDE	County Director of Education
EFA	Education for All
EMIS	Education Management Information System
ICT	Information Communication and Technology
IT	Information Technology
KEMI	Kenya Education Management Institute
KENAO	Kenya National Audit Office
KICD	Kenya Institute of Curriculum Studies
KSSHA	Kenya Secondary Schools Heads Association
LBA	Learning Behaviour and Attendance
MOEST	Ministry of Education Science and Technology
MIS	Management Information Systems
NCES	National Centre for Educational Statistics
NACOSTI	National Council of Science and Technology and Innovation
OECD	Organization for Economic Co-operation and Development
TSC	Teachers Service Commission
TIMSS	Trends in International Mathematics and Science Study
UNESCO	United Nations Educational Scientific and Cultural Organization
USAID	United State Agency for International Development
SACMEQ	Southern and Eastern Africa Consortium for Monitoring Educational Quality
SPSS	Statistical Package for Social Sciences
UNESCO	United Nations Educational Scientific and Cultural Organization
PIRLS	Progress in International Reading and Literacy Study

CHAPTER ONE

INTRODUCTION TO THE STUDY

1.1 Introduction

This chapter examines the background information to the problem, statement of the problem, the purpose and objectives of the study, research questions, hypotheses, significance and justification of the study, scope, limitation and assumption of the study, theoretical and conceptual framework and finally operational definition of keys terms.

1.2 Background to the Study

The new millennium heralded rapid technological advancements which have impacted on the management practices of organizations including learning institutions worldwide (Bright & Asare, 2019). Thus the use of Educational Management Information System (EMIS) in learning institutions has rapidly gained ground worldwide. Gabriel and O'Brien (2018) assert that the use of Information Communication Technology (ICT) in school management can better assist school managers in accomplishing their administrative tasks. In this regard, the integration of ICT in management provides administrators and teachers with information required for informed planning, policy making and evaluation (Visscher, 2016).Therefore effective and efficient utilization of ICT guarantees maximal output from school management. Hence EMIS have provided an opportunity for effective management of secondary despite the constraints of its implementation.

EMIS is an institutional service unit for producing, managing and disseminating educational data and information, within a national Ministry or Department of

Education (UNESCO, 2010). According to United Nations Educational Scientific and Cultural Organization (UNESCO), the management functions of EMIS include collecting, storing, integrating, processing, organizing, outputting and marketing educational data in a timely and reliable fashion (Odhiambo, 2017). EMIS is also defined as system of people, technology, models, methods, processes, procedures, rules and regulations that function together to provide education leaders, with information to support them in completion of their responsibilities (Odusanya, 2019). According to Abdul-Hamid (2014) EMIS is a necessary element of an education system that enables policy makers to make critical modifications to the system in order to improve the quality of education.

Mugo (2014) states that Education Management Information System is potentially a powerful tool that can contribute to the improvement of management of learning institutions. It can therefore be inferred that integrating EMIS in to school management system guarantee the achievement of educational goals. Gurr (2017) studied the use of EMIS in the management of curriculum and instruction and the study found that the use of ICT by school managers lessened their workload and made the management process to be more effective use of time became more efficient and increased the quality of in-school communication. This in turn led to enhanced supervision of student progress as well as the improvement of school resources management. School management means running the school along the desired educational policies. It takes into account all aspects of the school (policies, material and human resources, programmes, activities, equipments etc.) and integrates them into a fruitful whole. Good school management motives the best efforts of the teachers and students (Atchoarena, 2017).

From global perspective, EMIS has gained credence in virtually all educational management level. According to Price Waterhouse Coopers (2004) the use of EMIS to address teacher workloads in the United Kingdom, have a significant role to play in improving institutional effectiveness due to its ability to reduce routine administrative duties , improve the effectiveness of support staff, facilitate the transfer of some tasks from teachers to support staff and enable teachers to plan more effectively and deliver teaching and learning (Ejimofor & Okonkwo, 2022). The Price Waterhouse Coopers (2004) study however pointed out that the reduction of workload is only possible if factors such as the confidence of the users are taken into account.

A study in Union City School District in the USA showed that school-community relations was affected when computers were installed in schools and homes of teachers and parents. This led to improved messaging within stakeholders such as schools, parents, central decision makers and businesses thus fostering accountability, public support and connectivity (Demir, 2016).Fulton County Schools, outside Atlanta City in Georgia, have adopted data-driven decision-making as part of a comprehensive strategic planning process (James-Maxie, 2012). In this plan, everyone is involved right from classroom teachers to principals to administrators. The district data management and analysis systems provide increasingly customized and more frequent information to decision makers (Breiter & Light, 2016). Althobeti (2013) asserted that EMIS can play a role in increasing transparency and accountability in budgeting and financial management, revenue mobilization and expenditure in learning institutions in Saudi Arabia.

With respect to human resource, the use of EMIS can have a positive influence as evidenced in an Indian study which showed that EMIS could be employed in human

resource management by way of biometric attendance system and the study concluded that the problem of absenteeism by teachers and students would be solved thus bringing in more accountability and discipline (Hooda & Malik, 2012). Computerization of student attendance can help identify students who are not attending school thus assist the school management to take appropriate measures such as informing the parents (Fashiku, 2018). Therefore the use of EMIS in human resource is instrumental in reducing clerical time required to check presence or absence and also enable attendance data to be entered in report forms. In Malaysia there are positive changes on the use of EMIS in school management, including better accessibility of information, more effective administration and higher utilization of school resources (Zain et al., 2013).

In Sub-Saharan Africa, information and Communication Technologies are increasingly present and have been introduced to varying degrees at all educational levels from pre-school to university, and in both formal and informal sectors (Karsenti, Kozarenko, & Skakunova, 2020). However, it is still not utilized in management of schools in other countries. For instance, in South Africa Statistics (2011), only 25. 2 per cent of the schools in rural areas had a computer, 7.1 per cent accessed Internet at home, 91.9 per cent had cell phones, and 59.4 per cent had no internet access at all. Township schools are poorly resourced compared to some schools situated in the middle-and-upper class communities (Donohue & Bornman, 2014). Learners from affluent schools are exposed to different types of ICTs both at home and at school. Those from poor townships, farms and rural areas might not be exposed to all the new technologies, hence creating a digital divide among learners.

Bright and Asare (2019) outlined some of the specific tasks in management where Management Information Systems (MIS) could be used including in curriculum instruction, human resource, finance and security in Kumasi Campus in Ghana. In Ethiopia, the ICT strategy envisages the integration into the learning, teaching, and administration of the school system through EMIS. But only 40% of schools in Ethiopia have computers. Besides, most of the schools that do have computers are in Addis Ababa, creating a major rural-urban divide should the strategy be implemented within the context (Siska et al.2020).

A study conducted in Uganda and Botswana on the use of information technology in education management found out that, though the use of information systems was still at an early stage in both countries, positive effects were reported in the use of technology in the management of personnel records of teachers in Botswana and thus cases of 'missing' files was minimized (Kereteletse et al., 2008). In Tanzania, as reported by Malekani (2018) the situational analysis reveals that the government and the MoEVT recognize the potential of ICT to act as a tool for improving education delivery, outcomes and impact, as evidenced through the national plans, policies and strategies. The Tanzania Vision 2025, the key national development strategy, recognizes the role of education as a strategic change agent for transformation of the economy to a knowledge economy, and identifies the potential of ICT to address most of the development challenges including those presented by education. The National ICT Policy of 2003 recognizes that ICT can enhance education opportunities and advocates for the introduction of an e-education system (Malekani, 2018).

In Kenya, the Government through various strategies and policy documents has indicated the need to support the use of EMIS in education management. This is

evidenced by The Government's commitment to embracing EMIS in education management which can be traced back to the National ICT policy of 2006 whose relevant objective in the education sector was to encourage the use of ICT to improve the quality of education (Musungu, Ogula & Munyua, 2021). Besides, the Kenya Education Sector Support Program featured ICT as one of the investment program with a subcomponent supporting ICT in educational management (Madiha, 2013). Other policy documents which emphasize ICT as a tool for educational management while recommending that educational managers be ICT literate include the Kenya Vision 2030 which is Kenya's development blueprint whose aim is to make Kenya a newly industrialized country (Republic of Kenya, 2015). The relevant objective in the policy is the modernization of the training of managers and strengthening partnerships with the private sector to develop ICT literacy among educators (Rieckmann, 2017).

The Government in collaboration with development partners also came up with a number of practical interventions to ensure that these policy objectives are implemented at the institutional level. According to the National Sector Education Plan (2015), projects that have been implemented in line with this policy include the NEPAD e-schools and the Economic Stimulus Programme-ICT Computer for schools project. This was done in the period 2010 to 2012, through which Ksh. 980 million was allocated to equip five public schools from each constituency countrywide with comprehensive ICT infrastructure. At least 15 schools in Uasin Gishu County benefited. In addition, issues of training have also been addressed through the establishment of the National ICT Integration and Innovation Centre (NIIIC) (Kipsoi et al., 2012).These policy documents encourage the use of technology for management in the education sector (Mutula & Mostert, 2010). However, the National Education Sector Plan ROK

(2015) and the Policy Paper for Reforming Education and Training show that some of the problems that hinder Kenya from reaching its educational goals include those of governance.

The challenges in school management which lend themselves to intervention by the use of EMIS can be appreciated when looked at in terms of changes in enrolments which have occurred since the implementation of free primary education (FPE) in 2003 and which cascaded to schools at the secondary level when free day secondary education (FDSE) was implemented in 2008 (World Bank., 2015). The accelerated enrolment of students in the existing secondary schools and opening of new ones to cope with pupils transiting from primary schools has not been proportionately matched by the recruitment of new teachers due to the policy of only replacing teachers who have exited through natural attrition rather than employing new ones. This has led to large student-teacher ratios, overstretching physical infrastructure thus compounding management processes (World Bank, 2013).

Uasin Gishu County has not been an exception of the rise of students' enrolment by 107 percent from 32,570 in 2011 to 67,314 in 2016 and nationally by 54 percent from 1,767,720 in 2011 to 2,723,688 in 2016. This increment is against a teaching work force in secondary schools that has remained around 1,893 in Uasin Gishu County and 88,981 nationally. It is worth noting that such an increase has an implication on management of schools as the data spawned by the increasing number of students need to be carefully managed and analyzed in order to make appropriate management decisions in terms of curriculum and instruction, human resource management, financial resource management and provision of security (Government of Kenya, 2017; Ocharo &Kennedy, 2017)

According Ocharo and Kennedy (2017) school records such as those of finance, staff and learners attendance and student performance are in most cases not well managed thus bringing about gaps in the Education Management Information System (EMIS) data returns. To address such problems, the Teachers Service Commission (TSC) recently came up with a requirement for head teachers to collect information from their schools using a tool referred to as 'EMIS Secondary Schools Data Returns Form A' which captures variables such as school identification, school characteristics, school enrolment, number of streams, staff establishment and management, examination performance and summary data (Ndiku et al., 2014).

However of use of EMIS to support school management varies across schools hence the tendency by schools to keep only those variables needed by the government for reporting (Njoroge et al., 2017). For instance some schools have overestimated student enrolment for purposes of getting more capital grants are considered a criminal act (Republic of Kenya, 2015). Such malpractices have indeed been unearthed by The National Audit office in counties such as Nairobi, Kiambu and Machakos, as those having schools with inflated enrolment figures (Government of Kenya, 2017). In this regard the effectiveness and efficacy of EMIS remains a common place in secondary schools. Therefore, the expected impact of EMIS is not noticeable as there were still some management challenges encountered which include poor supervision leading to teacher absenteeism and lateness (Odhiambo, 2017).

A World Bank report noted that teachers could actually be in school but not in class (World Bank, 2013). Financial management challenges have also been a hindrance in schools in Kenya including Uasin Gishu County (Kipsoi et al., 2012). Other school

managerial activities that lend themselves to being handled more efficiently by EMIS include curriculum and instruction, human resource and school security. Available studies on the use of technology in education in Kenya include Njoroge et al. (2017), Odhiambo, (2017), Ocharo and Kennedy (2017) with limited studies on EMIS and management of public secondary schools in the Kenyan context. It is against this background information the study sought to examine influence of the use of EMIS on secondary school management in Uasin Gishu County.

1.3 Statement of the Problem

Secondary schools collect, compute and store valuable data to be converted to valuable information for their effective management (Ocharo& Kennedy, 2017). However, it has become clear, over time, that utilization of these data for purposes of decision-making in public secondary schools has been quite difficult despite having EMIS (Tondeur, Krug, Bill, Smulders & Zhu, 2015). Beside the stakeholders in education are still complaining of schools not translating these information to required output hence compromising on the effective management of their schools (Government of Kenya, 2017).If this trend is not addressed then it paints bleak future on accountability issues, management of resources effective supervisory of curriculum implementation therefore advisedly affecting students‟ academic progress (Odhiambo, 2018).

Reviewed literature indicates that points out that schools lack IT processes to support sound decision-making based on timely, relevant and concise information (Ministry of Education, (2019).Wangui (2015) did a study on application of educational management information system to task management for cost effectiveness in public secondary schools in Kandara Sub-County, Muran'ga County, Kenya. The study

revealed that use of EMIS application to task management was cost effective in public secondary schools. (Odhiambo, 2017) examined influence of use of Education Management Information System (EMIS) on management of secondary schools in Nairobi City County, Kenya. The research found out that the use of EMIS module for curriculum and instruction, human resource, school-community relations and finance influenced positively the management of secondary schools. However this was only limited to Nairobi County and it was not generalizable in other Counties.

Ocharo and Getange (2017) assessed principals' information systems' utilization on management of communication in public secondary schools in Nyamira County, Kenya the study revealed that information systems utilization has a direct relationship with its outcomes on management of public secondary and communication. It is clear from the above studies that there are limited studies bundling EMIS elements such as student information management, human resource management, financial management and safety and security management to explore the effects of EMIS on effective management of public secondary schools in Uasin Gishu County providing a gap for the study. Filling this literature gap, will also provide recommendation for secondary school stakeholders to enhance implementation of EMIS a through policy framework.

1.4 Purpose of the Study

The purpose of this study was to investigate the influence of Education Management Information Systems on Management of public secondary schools in Uasin Gishu County.

1.5 Objectives of the Study

The study was guided by the following objectives;

i. To establish the influence of EMIS for student information management on management of secondary schools in Uasin Gishu County.
ii. To assess the influence of EMIS for human resource management on management of secondary schools in Uasin Gishu County.
iii. To analyze influence of EMIS for curriculum and instruction on management of secondary schools in Uasin Gishu County.
iv. To evaluate the influence of EMIS for financial management on management of secondary schools in Uasin Gishu County.
v. To examine the influence of EMIS for safety and security management on management of secondary schools in Uasin Gishu County.

1.6 Research Questions

i. What is the influence of EMIS for student information management on management of secondary schools in Uasin Gishu County?
ii. How does EMIS for human resource management influence management of secondary schools in Uasin Gishu County?
iii. What is the influence of EMIS for curriculum and instruction on management of secondary schools in Uasin Gishu County?
iv. How does EMIS for financial management influence management of secondary schools in Uasin Gishu County?
v. To what extent does EMIS for safety and security management influence management of secondary schools in Uasin Gishu County?

1.7 Hypotheses

H_{01}: There is no statistically significant relationship between EMIS for student information management and management of public secondary schools of Uasin Gishu County.

H_{02}: There is no statistically significant relationship between EMIS for human resource management and management of public secondary schools in Uasin Gishu County.

H_{03}: There is no statistically significant relationship between EMIS for curriculum and instruction and on management of public secondary schools in Uasin Gishu County

H_{04}: There is no statistically significant relationship between EMIS for financial management and management of public secondary schools in Uasin Gishu County.

H_{05}: There is no statistically significant relationship between EMIS for safety and security management and management of public secondary schools in Uasin Gishu County.

1.8 Justification of the Study

Educational management would be more effective where an efficient Educational Management Information System provides a smooth flow of information to managers and other stakeholders at all levels of education (GOK, 2015). This brings to light the question on the role of EMIS in furnishing school administration with information for effective management. The gravity of ineffective utilization of school data to generate appropriate information was further observed in the National ICT Strategy in Education and training of 2006.

Odhiambo (2017) asserts that school enrolment, facilities, teachers and other related aspects were collected at the district level and sent to the headquarters for analysis thus caused delays in decision making and follow-up actions by both schools and MoEST (Government of Kenya., 2017). This affirmed the problem of existing data in respect to data bank besides managers lacking competence in utilizing available information for management purposes (GOK, 2017) policy documents encourage the use of technology for management in the education sector. It is in this respect EMIS finds its imperative role of converting such existing data into information that school managers can synthesize for decision-making process in Uasin Gishu County.

1.9 Significance of the Study

The findings would help in policy formulation and implementation; it would guide policy makers at the Ministry of Education, the Teachers Service Commission and the County Education Boards (CEB) with regard to the implementation of EMIS in the management of schools. The findings may also provide information that could be used by the Kenya Education Management Institute (KEMI), Kenya Institute of Curriculum Development (KICD) and Teacher Training Institutions to improve on their professional development programs on EMIS in school management for principals and teachers. This would give hands-on experience to enhance utilization of EMIS. The findings would also be useful to school Boards of Management to enable them use EMIS in a practical way to enhance management in schools and also identify areas where more training is needed. The principals would use findings for appraisal in the use of EMIS and assist in planning for training. The study would additionally contribute knowledge to the field of educational management with regard to the use of EMIS and also provide data for further research in related fields of interests to scholars. Furthermore, the research

findings would enlighten educational interest groups like Kenya National Union of teachers (KNUT), Kenya Union of Post-Primary Education Teachers (KUPPET) and Kenya Secondary Schools Heads Association (KESSHA) on the importance of EMIS.

1.10 The Scope of the Study

The scope of a study describes the extent to which the study area was explored in the work and identifies the parameters within which the study was operating (Leca, Lawrence, Suddaby & Leca, 2009). They describes the boundaries that you have set for the study (Yin, 2017). The study focused on the influence of Education Management Information Systems on Management of public secondary schools in Uasin Gishu County. Elements of Education Management Information Systems such as student information management, human resource management, curriculum and instruction, financial management and safety and security management as independent variables. The dependent variable was management of public secondary schools. The conceptual link between the dependent and independent variable was anchored on Unified Theory of Acceptance and Use of Technology by Davis (2016). The study target population was 1334 respondents which included 183 principals, 189 deputy principals, 955 HODs in public secondary schools, 1 County Directors and 6 Sub-County Directors of education Uasin Gishu County. This study adopted mixed method research design and was conducted between May 2021 and November 2022.

1.11 Limitation of the Study

Theofanidis and Fountouki (2018) explain limitations as factors related to design or methodology characteristics that may influence interpretations of the study findings. The use of mixed methods research design for instance could suffer inequality between

different methods which may result in unequal evidence within the study, which could be a disadvantage when interpreting the results. The researcher delimited this by ensuring that the study findings are grounded on both quantitative and qualitative data.

The research was conducted at the peak of the COVID 19 pandemic, when there were a lot of restrictions hence accessibility to schools was limited. However, the researcher adhered to the regulations provided by the Ministry of Health which included wearing of masks, having a hand sanitizer at hand, COVID 19 vaccination certificate and taking temperature tests. Since the study was done during working hours of the day, most of the respondents were busy during the study period. In this regard, the researcher had to wait. Some questionnaires were left behind and collected at a later date.

Other limitations of this study were that the research was conducted in public secondary schools limiting generalization of the findings to private schools. Thus, future studies will have incorporated private Secondary schools. Furthermore, to shed more light on the types of EMIS in secondary schools it would have been more informative to include software developers of these EMIS, as they would have a deeper understanding of what their EMIS were capable of achieving. This cushioned the study from overwhelming amounts of data.

1.12 Assumptions of the Study

This study made assumptions relating to EMIS and management of public secondary schools. The study assumed that all public secondary schools in Kenya have complied with Ministry of Education requirement on implementation of EMIS. The study also assumed that in operating school activities all public secondary school in Uasin Gishu use EMIS. It was also assumed that all teaching and non-teaching staff is well

acquainted with EMIS. The assumption was also made that by effectively implementing EMIS, the management of public secondary schools was bound to be effective. The study further assumed that all school administrators supported the use of EMIS by training teachers and non-teaching staff.

1.13Theoretical Framework

The study used Unified Theory of Acceptance and Use of Technology by Davis (2016). The goal of the theory is to provide an explanation of the determinants of computer acceptance that is general, capable of explaining user behavior across a broad range of end-user computing technologies and user populations, while at the same time being both parsimonious and theoretically justified. Ideally one would like a model that is helpful not only for prediction but also for explanation, so that researchers and practitioners can identify why a particular system may be unacceptable and pursue appropriate corrective steps (Williams et al., 2015). A key purpose of the theory therefore, is to provide a basis for tracing the impact of external factors on internal beliefs, attitudes and intentions. Technology acceptance theory was formulated in an attempt to achieve these goals by identifying a small number of fundamental variables suggested by previous research dealing with the cognitive and affective determinants of computer acceptance (Venkatesh et al., 2016).

The technology acceptance model has also been used by researchers to explain why a particular system may or may not be acceptable to users. It hypothesizes that there are two beliefs, perceiving usefulness and perceiving ease of use which are variables that primarily affect the user acceptance. The theory will be relevant to the study because, it suggests that the external variables indirectly affect individuals attitude toward adoption

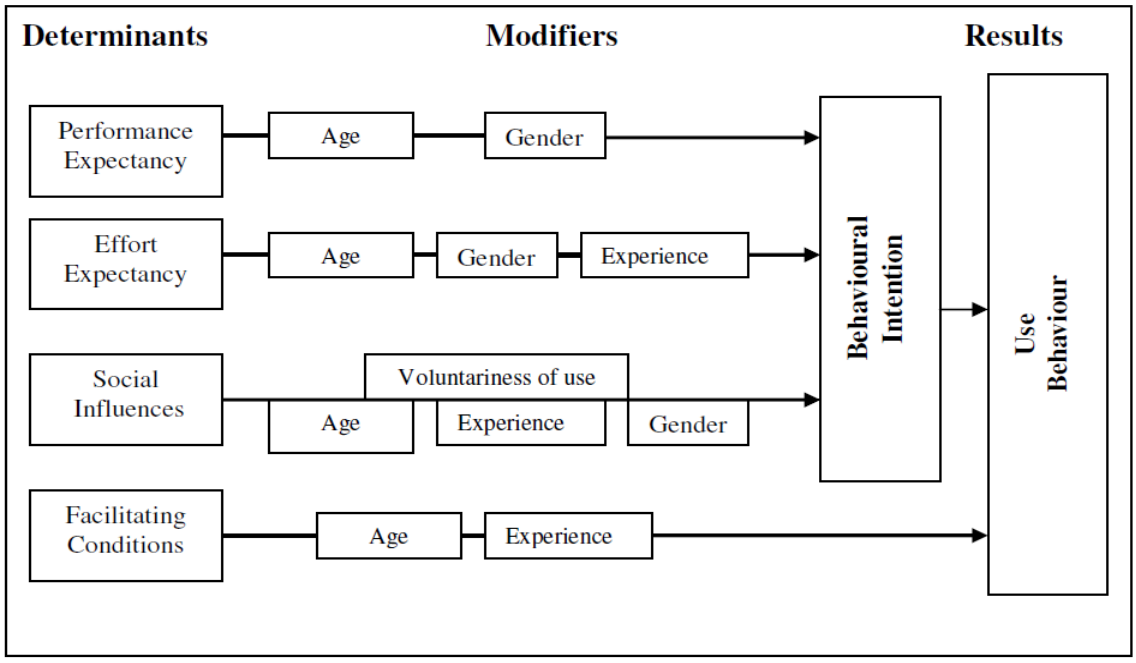
of information communication technology by influencing perceived usefulness and perceived ease of use. External variables might include individual user attributes, social factors or those related to their job tasks (Dwivedi et al., 2019). This will explain how the use of EMIS influences effective school management.

Attuquayefio and Addo (2014) determined the strength of predictors for students' intention to accept and use ICT for learning and research in Ghana by using the UTAUT model and found that effort expectancy was a significant predictor of behavioral intention to use ICT. Arif et al. (2018) applied the UTAUT model for understanding student perceptions using course management software, but mixed support for the model was found in terms of the reliability of the scale items representing the UTAUT constructs and the hypothesized relationships. Although the students agreed that the course management software is a good concept and use it regularly, most of the software's features are not being used to their full potential.

Moran et al. (2010) examined students' acceptance of tablet personal computers using a modification of the UTAUT in order to identify the variance of selected acceptance elements that contribute to the overall behavioral intent to use tablet PCs. In the milieu of their study, the variables of performance expectancy, effort expectancy, attitude toward using technology and self-efficacy were key components of behavioral intention. Social influence and anxiety did not appear to contribute much towards behavioral intention. Liebenberg et al. (2018) stresses that researchers should consider technological expectancy as well as educational compatibility (the unique learning expectancies of students) while studying technology acceptance in educational settings. From the study, educational compatibility had a greater total effect on e-learning acceptance than technological expectancy.

Chumo and Kessio (2015) used UTAUT model to assess ICT adoption in Kenyan Public Universities. Their findings indicated that effort expectancy, performance expectancy and social influence affect the student's behavioral intention, and ultimately affects adoption of web-based information system. The model explained high variance of the student's behavioral intention to use web based information systems. Students who were taking ICT related courses such as Information Sciences, Engineering, Computer Science and Informatics had high efficacy for use of web-based systems.

This study therefore aimed to apply the UTAUT model to investigate the influence of education management information systems on education management in public secondary schools in Uasin Gishu County.



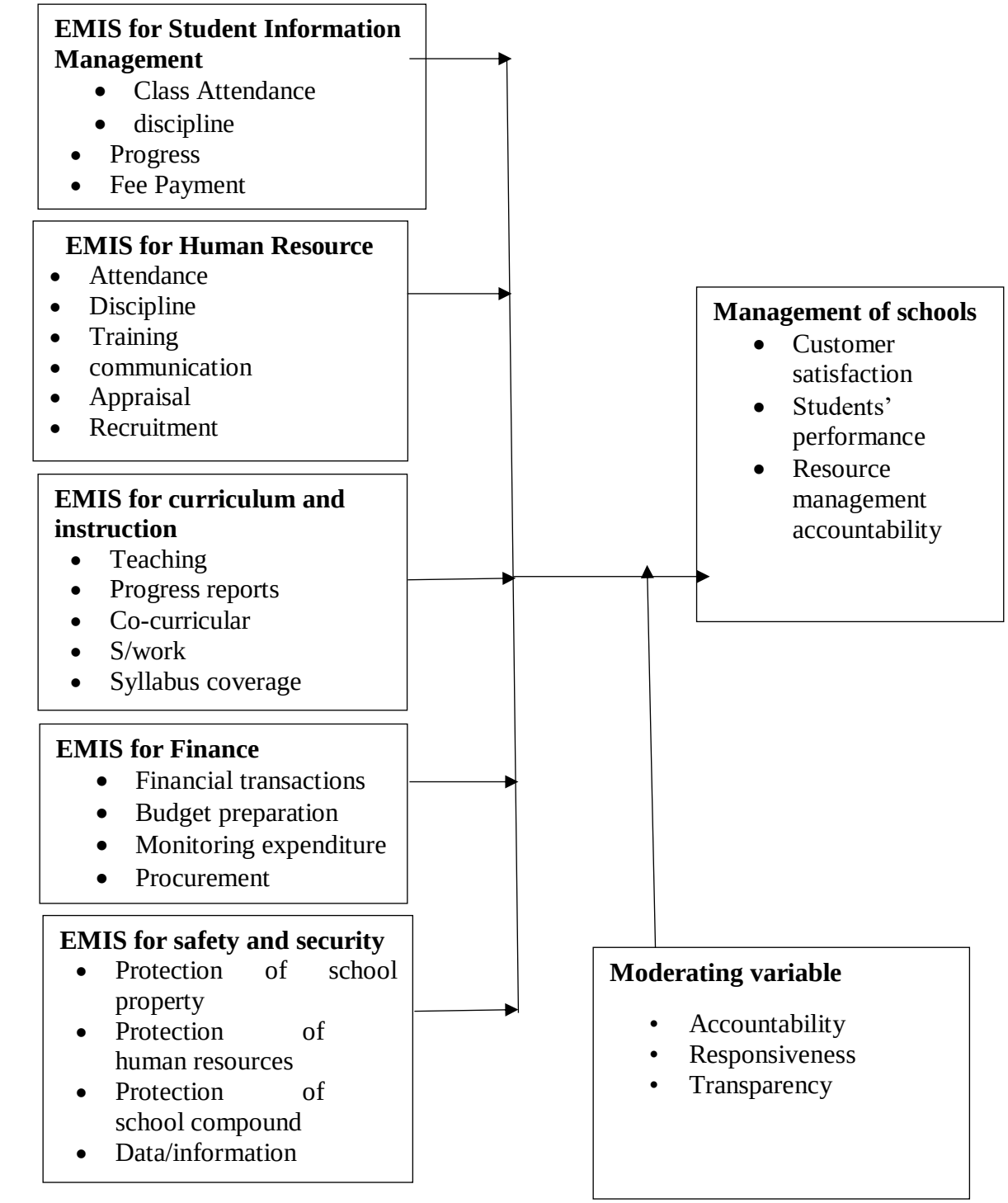
Source: (Davis, 2016)

Figure 1.2: ***The Unified Theory of Acceptance and Use of Technology***

1.15 Conceptual Framework

Tamene (2016) defines conceptual framework as the organization of concepts, assumptions, expectations, beliefs and theories that support and informs research. The framework conceptualizes EMIS as an independent variable while management of secondary schools as dependent variable. It is based on the UTAUT Model on figure 1.1

Independent Variable **Dependent Variable**



1.16 Operational Definition of Key Terms

Curriculum and instruction: practice of improving teachers' classroom performance in Public secondary schools using EMIS.

Financial management: planning and utilization of public secondary school funds in accordance with regulations and procedures from the Ministry of Education Using EMIS.

Education Management Information System (EMIS): ICT software by which data in public secondary schools are collected, aggregated, organized and Processed for use by management in decision making.

Human Resource Management: is panning, organizing, directing coordinating and controlling of teaching and non-teaching to attained the goals of public secondary schools using EMIS

School Management: is organization and co-ordination of activities to attain objectives of public secondary schools using EMIS.

Students information management system: is collected, aggregation organized and processing of students information

Safety and security management: is the process for preventing or reducing the chance of experience harm or lost in public secondary schools using EMIS.

Curriculum and instruction: is the process of implementation of knowledge and skills to increase learner achievement in public secondary schools using EMIS.

CHAPTER TWO

LITERATURE REVIEW

2.1 Introduction

This chapter focuses on related literature of the study, it contains a survey of related literature on the influence of EMIS on management of public secondary schools. It includes the current literature pertaining; The Concept of Educational Management Information System EMIS, Development and Local Demands, Components of Education Management Information System, Education Management Information Systems in the world, EMIS in Africa, Management of schools, platforms of EMIS, influence of use of EMIS on curriculum and instruction, human resource management, finance and security management in secondary schools. It also captures literature on challenges to effective EMIS in secondary school management.

2.2 The Concept of Educational Management Information System

Computerization of school management is the basic subject of school management (Demir. , 2016). Many principals in secondary schools make use of information systems in daily management of their schools. For management of the core-curriculum, they make use of Education Management Information System (EMIS). Mansour (2017) affirms that it is the instruments by which one can gather information, store it, incorporate, break down and spread/disseminate. EMIS is the human and computer-based process for gathering all data and information needed to back all the operations of the education sector including decision making.

EMIS makes school programs more effective, thus making the teaching process and the changes in learning environment professional. It enhances team work

and facilitates teachers' exchange of experiences in a more systematic way (Gurr, 2017). It enables teachers to determine academic needs of their students. Moreover, a school EMIS supports school managers and other staff in doing their duties, developing their performance, effectiveness and efficiencies (Telem, 2015). Unfortunately, the impact of ICT in assisting school managers to carry out monitoring and evaluation of their systems has not been given much attention by researchers. This has made it difficult for education experts to assess what MIS systems schools use. There exists inadequate evidence to assess the impact of SMIS on schools‟ formal curriculum management. It remains unclear whether these MIS supported decision-making process in curriculum management (World Bank, 2015).

Bhatti and Adnan's (2010) study presents a challenge to the Education Management Information System (EMIS) , offering an EMIS, which not only aims to collect statistics from the schools by following people, models, methods, procedures, processes, rules, and regulations but also relates to the emerging computer technology to ensure that all functions work together to provide timely and dependable data to education leaders, decisions makers, planners and managers in order to efficiently perform their tasks to realize their goals (Arif et al., 2018). Computer technology provides technical support to the EMIS by providing the right people with the right information at the right time to make best decisions, planning, and monitoring in the best interest of the organization. Dudeney (2015) affirm that EMIS can help school management to work more efficiently by for example improving the tracking of learner out comes, behaviour, curriculum and other pedagogical data in addition to providing on-demand updated data at different levels, thus individual student, class, subject or the entire school and by strengthening communication among staff, students and parents.

Evans (2013) urged that the use of IT in education management promotes effective and efficient use of information. The study noted that it promoted transparency and accountability as well as promoting the use of decision support systems and promoting educational development. Data and information in the MIS can be shared by other stakeholders in education, such as the MoEST, hence transparency in management (Breiter & Light, 2016). This information can be requested by education planners and policy makers, thus used in developing education at higher levels beyond school.

According to Karsenti et al. (2020) the media that are used for this communication and sharing include TV, radio, computers, and smartphones and various other networking and satellite systems. Hence, ICT involved all the communications mediums that are used to distribute and communicate information. Shafique and Mahmood (2012) deduced that ICT and EMIS are directly related with each other in order to establish effective communication to share and distribute information. EMIS cannot work properly without an effective ICT system and EMIS is crucial when implementing different educational policies within a system (Althobeti, 2013). According to Breiter and Light (2016) ICT can help in improving the educational system of a developing country to achieve economic prosperity. Therefore, it is essential for any government to improve its ICT infrastructure so that EMIS can work effectively and achieve its objectives.

2.3 Education Management Information Systems in the World

As early as 1970's, the increased significance of information as a prime resource in management had been realized. Information and Communication Technology (ICT)

became a tool for management in the corporate world including schools towards the end of the twentieth century (Oyier & Mwanda, 2011). Its importance in supporting decision-making processes had led to the development of various approaches to information management. Several studies in school MIS have been carried out in various parts of the world. Walekhwa and Ndiku (2016) carried out a study to determine the computer literacy skills among the school administrators in Rarienda Sub County. The study found that majority of principals lacked the computer skills that are required for their administrative roles. Their skills were rated to be below average. The outcome for the Sub-County Education Officer (SCEO), Sub- County Quality Assurance Standards Officers (SCQASO) and Head of Departments (HODs) skills implied the same outcome.

2.3.1 Education Management Information System in USA

Chitolie-Joseph (2011) did a study on An Investigation into the Use of the Education Management Information System (EMIS) in Secondary Schools in St. Lucia – The Case of One Secondary School where she found out that the EMIS was underutilized and that technical, economic, training and personal, software and organizational factors contributed to the limited use of the system. Cash (2015) examined School leaders and the implementation of education management information systems (EMIS) in the Bahamas where he revealed that EMIS was often perceived by principals to be associated with conflict and the primary uses of the technology were for generating report cards, facilitating school administrative tasks and monitoring. Principals' expressed concern for the lack of support from senior management and the impact of using the technology on their role as leader. As conflicts hindered the implementation of EMIS, principals adopted a shared leadership approach (Althobeti, 2013).

Bhatti et al. (2013) did a study on the utilization of information generated by EMIS and the challenges experienced integrating this information into management practices in North West Frontier Province. The study revealed that EMIS had an important role in the planning and decision making process, implementing the technology challenged the decision making processes. It was also revealed that collecting, processing and integrating information into EMIS increased the workload of staff responsible for data entry. In addition the research showed that EMIS can readily perform administrative functions in a way that provides timely, reliable and accurate data for decision-makers to perform their responsibilities efficiently. In this study several leadership issues are noted with EMIS.

Akarsha et al. (2019) described the overview of Automated School Management System in the US. All the analysis on HTML5, CSS, Android, Java Script was done and based on the application building program, it was initiated and its functionalities were strictly focused on the transparency between parent and teacher. A dedicated server operated by an admin was implemented to maintain and monitor records of the client (Bejtlich, 2013). The database consisted of details with respect to students, parents and teachers which were controlled by the admin. The security factors were considered while sending daily notifications as it is a parent teacher notification system. The system when implemented was very beneficial as well as convenient to every parent, student and the school administration.

2.3.2 Education Management Information System in Europe

In Britain, teachers, head teachers, senior teachers, administrators use SMIS to understand the quality of teaching and achievement of students in the schools (Cheryl,

2015). Every student's progress is tracked and this enables teachers to make decisions that improve students' performance. EMIS are used in effective communication between head-teachers and the teaching staff. The EMIS have lightened teachers‟ workloads and improved performance (Ferguson, et al., 2016).

The British Government through its Department for Education issued a guide on considerations in selecting a SMIS (Sims et al., 2008). It outlined features that MIS should have. These features included data management, reporting to support learning and management in schools, ease of use, user support, sound security, messaging, alerts and remote access. This guide further emphasized on the following functions: ability to capture school attendance, lesson attendance, timetable management including rooms, times and staff allocations, and behavior management (Department for Education., 2014).

According to Buabeng-Andoh (2012) a 2005 report in Britain (BECTA, 2005), the British Educational Communications and Technology Agency, a public body funded by the British Ministry of Education, described School MIS as "crucial to institutional effectiveness," referring to the potential to "improve efficiency and performance," and identifying a number of ways that school MIS achieve this. The report noted that MIS reduced the administrative burden on school staff and made more efficient use of expensive teacher time through more effective timetabling and facilitated a more individualized learning approach by matching curriculum resources to particular teaching and learning activities (Bruns et al., 2011).

A study done by Heirdsfield et al. (2016) in institutions of higher learning in Europe indicated that students both in and outside campus found collaborative learning through

tools such as wikis and discussion boards. This helped a lot in share learning in group discussions. Residential campus students value more interactions with content in the learning management system, while commuter campus student value more learner to learner experiences in the learning management system (Lonn & Teasley, 2017). EMIS also assisted in curriculum and instruction, some courses were completely online, while others were a mix of face to face and online elements. Instructors were pressured by their intuitions to use a learning management system or they may wish to reach a broader audience of students. Vord and Pogue (2016) in another study in Europe suggested that while face to face instruction requires more time per student, certain aspects of online teaching take considerably more time per student than in a face to face classroom. Instructors do value tools within the learning management system and overall feel value from its interaction. They especially value the ability to transmit documents and efficient communication enabled through the system. Instructor perception of the value of learning management systems to teaching and learning was highly variable, similarly suggesting along with student's views, that there is a high variability in the content and experience provided on an instructor by instructor basis (Lonn & Teasley, 2017).

2.3.3 Education Management Information Systems in Latin America and the Caribbeans

In Latin America and the Caribbeans, EMIS have been widely used of which it has experienced successes and failures (Cassidy, 2015). In Colombia, the use of information technology enabled them to bring significant financial savings and open 240,000 places in schools, of which 120,000 were the result of efficiency, and did not require hiring more teachers. Also the website of Mexico City provides geographic information, but it

is not easy to use, besides that the help and information are very limited. Chile in the 90s developed a system that facilitates the presentation and analysis of results allowed the comparison between schools in the municipalities. Provides detailed reports to compare the performance between schools within the community, region or nation. It is also possible to compare schools based on the socio-economic state of the community receiving the service (Fowler & Kendall, 2011).

Chitolie-Joseph (2011) examined EMIS with the intent of understanding how the technology was being used at the school level in St Lucia, Caribbean County. The study noted that the handling of technical, personal and organizational factors contributed to the limited use of EMIS. The findings revealed that, although EMIS was supported in principle, the implementation of the technology was embedded in leadership. Additionally, some states in Mexico have developed and maintained their own systems for educational planning. A particular case is the state of Aguascalientes (Echeverría & Santana, 2012). The state provides very easy access to a complete set of information for education by status and educational level. Also includes statistics, analysis, and the availability of 6 years of historical data (Spring, 2016).

Educators have long sought improved data and information with which to manage and strengthen education. The first set of computers were employed in these efforts in the region in the late 60s and the 1970s with the introduction of mainframe computers in the operations of the statistical departments in a number of countries in the region. These early efforts although largely limited to improving the collection and reporting of basic education statistics, set the stage for more earnest effort to computerize data and information systems that began in the mid-1980s when the goals of education began to

shift from access and expansion to quality; and relatively low cost computers and easy-to-use database and statistical analysis software became widely available (Walmart, 2012). By 1997 a number of countries, including Argentina, Brazil, Chile, Paraguay and Uruguay were producing education indicators for monitoring system performance and to facilitate comparative assessments with other countries in the region (Harrison & Comber, 2013).

In 2000 the Caribbean Regional Education Management Information System (CREMIS) was established with support from UNESCO as an effort to link education data systems throughout the Caribbean, promote the standardization of data and information system development and insure more timely availability of education data to support decision making and management (Di Gropello, 2003). Still, schools in less developed countries, such as those in South America, face more barriers to the use of ICT in addition to the primary represented by accessibility. Barriers range from access to computers, lack of software, technical and administrative support, teacher training, internet access and, in some cases, even lack of electricity in some areas (Avitia et al., 2020).

2.3.4 Education Management Information System in Asia

EMIS enable countries in Asia to be cost-efficient and effective in their education planning. When institutionalized and guided by a clear vision and strategic planning, an Education Management Information System (EMIS) helps policy makers manage an education system to produce quality outputs (UNESCO, 2014). Unfortunately, many countries have invested resources in building education management information systems, but these systems are often not institutionalized, lack a guiding vision, and are not incorporated into strategic planning processes (Villanueva, 2017).

In Pakistan, National Education Management System (NEMIS) deals in collecting information throughout the Pakistan and ensures the strategy designing, policy execution, budgeting and decision making for the national level. This is the initiator that provokes provinces to establish the institution that collects the information on a regular basis to eliminate the wastage of resources by proper utilization throughout the country (Shoobridge, 2015). In 1990 with the support of UN's financial and technical assistance NEMIS had started to serve as the national repository of education data and acting as the standard setting agency throughout the Pakistan (Soomro, 2011). Within a year it initiated to take support of all 4 provinces/regions to gather relevant education data. NEMIS has been operating in Academy of Educational Planning and Management since 1992, under the immediate supervision of Ministry of education from Government funding. It also involved in publishing the Pakistan Education Statistics annually since 1992-93.

Sindh, one of the four provinces of Pakistan set up Sindh Education Management Information System (SEMIS) to become one of the authentic systems that connected with the smart activities in the education department to record, maintain and sustain the data on a regular basis for future utilization (Shafique & Mahmood, 2012). The EMIS deals with the collecting, integrating and gathering of data throughout the Sindh. After collecting, processing and compiling, the data have been used to make the decisions and also submitted to the federal education department to support the NEMIS. Furthermore, the Sindh bureaucracies for education concerned utilize the calculated data to establish the decisions and execute the needful strategies to promote the education throughout the Sindh (Shaikh & Khoja, 2011)

The activities of NEMIS had started diminishing in December 1993 due to lack of interest and resources for the education sector, or dis-uniformity in the planning and fulfillment of commitments due to high corruption. Therefore, the Sindh felt significance of EMIS, and in 1994 the Govt. of Sindh took initiative steps to introduce the SEMIS. The collaboration of the World Bank (WB) is important to write in the history of SEMIS. However, the assistance of the World Bank (WB) has been ended in June 1996. The National-EMIS was overtaken by the Sindh-EMIS. SEMIS is considered as the milestone and the backbone of the education department in Sindh. It is also required to enhance the support of this system to make it face challenges (Soomro, 2011). After 1996, the SEMIS has been transferred from development to non-development without the support of the World Bank under Education Department Supervision (Villanueva, 2017).

2.3.5 Education Management Information System in the Middle East

According to Leithwood and Kayworth (2016) Middle East region suffers an endemic crisis in its teaching and teacher development systems. This crisis manifests as a shortage in the number of qualified teachers and a dearth of motivated teachers who can deliver quality teaching and learning within a twenty-first-century educational context. It is widely believed that addressing this challenge requires a range of interventions, including the integration and use of information and communications technology (ICT) and open and distance learning (ODL) opportunities (Perraton, 2016) edited in 2012. More recently, the rapid growth of mobile phone subscriptions in the region has sparked interest in how mobile phones in particular might enhance ODL opportunities for the professional development of teachers, and support teachers in their pedagogical practices and administrative duties (Harper, 2011).

Albirini (2016) conducted a study on teachers' attitude towards Information communication technologies in Hims. The study revealed that pre-service principal education can play a significant role in providing opportunities for experimentation with ICT before using it in the school administration. Lack of ICT focus in initial teacher training/education is a barrier to teachers' use of ICT. Where there is no effective training on ICT and educational technology, teachers will not be able to use ICT resources for integration in management.

Abu-Samaha and Shishakly (2016) did a study on Assessment of School Information System Utilization in the UAE Primary Schools where they found out that majority of primary schools have computerized their administrative activities at different levels via the Ministry of Education's suggested system or individually procured systems. Though, the use of Information and Communication Technologies, including SIS, is in its initial stage despite the adopted strategy by the UAE government to accelerate the effective utilization of educational management and automation technologies in the educational institutions and the Ministry of Education itself

2.4 Education Management Information Systems in Other African Countries

EMIS development initiatives have been also enforces in other African countries as follows.

2.4.1 The Case of EMIS in Nigeria

The EMIS of Nigeria was specifically designed to collect information of enrolment levels, retention rates, facilities, qualified teachers, faculties and other information from the census form. The purpose of EMIS was to provide support to state level planning and to generate reports. The output of these efforts had a direct impact on the planning

process and in identifying the anomalies in the education system (UNESCO., 2010). The study showed that EMIS in Nigeria is not effectively used in education planning at the federal as well as state levels. One of the reasons for this state of affair is that EMIS lacked the base-line information. The functioning of the government with various layers made it difficult to collect and collate the education data. The planning process in education was not supported by the EMIS due to poor reliability of data and lack of information of the policy directions by the federal government to the various agencies and to the state governments (Pedarpur, 2013).

Although the role of collecting and collating the data by the federal government, state government and the local bodies was clearly defined in the legislation, yet there were overlapping areas. The EMIS suffered due to difficulties in collection of the survey data, poor commitment from the stakeholders as well as lack of capacity (Atchoarena, 2017). The case of Nigeria showed that although centralization of data collection did not show a weak system but the pilot study taken up with decentralization in collecting the survey data at the state level, revealed that the results were good with decentralization of data collection. It is suggested that this approach may usefully be followed by other developing countries also. Political structure of the government and stability of the government was also seen to have influenced the failure of EMIS (Bhatti & Adnan, 2010).

Centralized system, lack of proper structure in the country, lack of knowledge and inadequate training of the staff were identified as the shortcoming of the EMIS of Nigeria (Aldarbesti & Saxena, 2014). Development of IT infrastructure helped in technical reforms of EMIS and was definitely a booster in the success of EMIS. Preparation of Education Strategic Plans (ESP) and setting up of a central agency to

plan and monitor the program helped in the success of EMIS. Development of standardized software also helped the program. Number of improvements were made on the behest of donor agencies (Martens, et al., 2020).

The latest system developed by Nigeria is named as Nigerian Education Management Information System (NEMIS). It is a web based system under the control of a central agency along with decentralized organization for collection of data. The database of the system has the data of the various states of Nigeria (Pius & Aiii, 2019). Initially the data of 28 states was up loaded on EMIS, which was to be further supplemented with the data of 11 more states. The system generated 50 reports. The database covered the education data, publications, training materials at the federal level and similar data of the State Ministry of Education and State Universal Basic Education Board (Rockart, 2016). The lessons learnt from the case of EMIS of Nigeria are that the role of federal government is very important in the success of EMIS. Developing a good organizational structure both at the central as well as at state level and active participation of private sector in data collection and data analysis contribute greatly in assisting the preparation of plans and strategies for education (Treek & Trobeet, 2014).

2.4.2 Case of EMIS in Zambia

Zambia has similar situation of education as that of Nigeria. Zambia like many other developing countries has also adopted the goal of Education for All (EFA) (Aldarbesti & Saxena, 2014). The policy educating Our Future is a right policy but its implementation is viewed as ineffective. Zambian government has taken initiative and increased its funding as well as external funding to achieve this objective. The education system in Zambia is faced with some of the challenges specific to country's own scenario (Kent, 2014).

Number of recommendations has been made by the Expert Committee to take corrective measures. One of the recommendations is to set up an Institute of Education (replacing the Curriculum Development Centre). Also, an independent Education Standards Agency is recommended to be established, which would report to the National Education Council and to parliament (Kapulu, 2010). The EMIS is to be strengthened to set up an evidence-based policy development unit. The units focus should be effective education research. The interaction on policy issues between Ministry of Education (MoE) and the donor community should be filtered through the Lead Donor mechanism (Aldarbesti & Saxena, 2014). The committee recommended that EMIS department should not only support the MoE with descriptive statistics but should also provide an annual report on The Policy & Planning Implications of EMIS" and supplementary sub-sectorial reports. The need is for starting the process of policy making based on evidence. EMIS plays an important role in providing the basic information in this regard. There is a need for an on-going research about what is happening in the class room, at the systems level as well as at macro level at optimum cost (Hinch, 2012).

2.4.3 EMIS in Zimbabwe

In a study of EMIS in Zimbabwe one must take note of Wako's argument that the success of EMIS depends on a strong vision that must: Demand responsiveness – whereby a chain of information management begins with taking the users' mindset into consideration. Based on the needs of the clients whereby periodic surveys of consumers' needs are undertaken to determine the information needs of consumers and the capacity needs of producers (Heard & Badcock-Walters, 2016).

Zimbabwe emphasizes an integration of decentralized and distributed sub-systems as it is through integration that the loose parts become effective when quality control procedures are put in place at all levels (Brinkhoff, 2017). This is possible through the use of common data processing software and quality control measures that allow each level of the sub-system to perform statistical functions for their own planning, policy and management needs at all levels of the government. The critical success factor that needs to be taken into consideration using the Zimbabwean experience is that of political commitment which ensures that directives to mobilize and authorize financial, material, human and institutional commitment to the implementation of the adopted strategy are followed (Wako, 2013).

Good governance has also been identified as a critical success factor because if all stakeholders who are have vested interests in the outcome are actively participating in the decision making, then an exercise of their oversight function as well as the issuing of guidelines and standards will be achieved (Helliker et al., 2021). Lastly, the sharing of responsibilities, expertise, costs, facilities and resources will ensure that a positive outcome is achieved to a far greater degree than when acting in isolation (Dias, 2010).

2.4.4 EMIS in Tanzania

The Tanzania Ministry of Education and Culture (2014), Bodo, (2016) and Powel (2010) describe the Education Management Information System (EMIS) as an institutionalized framework with a primary role to collect, process, analyze, disseminate and manage educational data and information necessary for educational management functions. The effective and efficient EMIS is expected to produce high-quality, relevant and accessible data for all users. The Southern African Development Community (SADC), in its EMIS Norms and Standards guidelines (2010), describes

eight dimensions of quality statistics; relevance, accuracy, timeliness, accessibility, interpretability, coherence, methodological soundness and integrity. EMIS units are often established within the Ministries of Education or departments accountable for education (Ministry of Educationand Culture Tanzania., 2017).

Tanzania, like other developing countries, has invested resources in its EMIS so that it can produce data and information that support educational management and development. Through monitoring and evaluation of sector performance, the government can efficiently manage its educational system by enabling information-based policy reforms and making effective strategic plans. With efficient collection, processing, analysis, dissemination and management of data and information, the delivery of education services can improve (UNESCO, 2014).

Unfortunately, government's limited capacity to support EMIS development and the increase in dependency on external financing and technical assistance threatens ownership and sustainability of the system. The small amount of financial and technical resources allocated to EMIS limit its efficiency, resulting in lower-quality data and statistics, leaving policymakers unable to base educational policy reforms and management decisions on an accurate picture of the system's strengths and weaknesses (Best, 2010).

2.4.5 EMIS in Namibia

The national education statistics were processed by the Statistics Division which worked closely with the central education department and the statistical education committee before the independence of Namibian (Shah & Zappen-Thomson, 2017). Only a small portion of data was entered and the processing of data was done manually.

Between 1990 and 1991 during the change of government, the Namibian Education Management Information System which included the Geographic Information System was developed to provide a record of existing schools and their locations. As Voights (2012) explains, this came about as a result of the Minister, Senior Managers and donors requiring a comprehensive record of schools in each region. As in the case of Zimbabwe, the needs of the users, the means of presentation to be used and the level of aggregation were taken into consideration.

2.4.6 EMIS in Ghana

In Ghana, the policy for decentralization is aligned with the collection and analysis of education data at the district level making it possible to help in the development operational plans that are linked to budget for implementation (Adu-Gyamfi, 2014). Besides, through EMIS and the provision of reliable and accurate data the allocation of resources becomes more efficient and responsive to the local needs. EMIS objectives assist the Ministry of Education and Science in developing strategic policies, developing operational plans and monitoring progress towards pre-defined targets. There is evidence of a strong collaboration between EMIS and the Policy, Budgeting, Monitoring and Evaluation Unit (Ajayi & Fadekemi, 2017).

Bright and Asare (2019) believes that this working relationship ensures that EMIS provides reliable data to the unit which analyses it in order to produce performance and monitoring reports for the Ministry. Ghana ensures the participation of stakeholders in making inputs in the monitoring process by the establishment of the Education Sector Technical Advisory Committee (Riddell & Nino-Zarazúa, 2016). This committee uses EMIS to monitor progress of policies towards set targets and to take action to ensure that policies are successfully implemented. The calculation of budget allocations per

district is based on the number of trained teachers, pass marks for Science, Maths and English, type of classroom structure, availability of water and seating capacity (Baffour-Awuah, 2012). EMIS is used to determine budget allocations according to identified local needs. In line with Ghana's practice, the Free State Department of Education could use the data from schools for budget allocation. Free State EMIS does not have an advisory committee that serves to advise the Executive Management on issues of information management and budgetary issues that will affect the performance of EMIS (Cheng & Moses, 2016).

2.5 School Management

Management comprises planning, organizing, resourcing, leading or directing and controlling an organization (a group of one or more people or entities) or effort for the purposes of accomplishing a goal (Althobeti, 2013). The use of means and resources for realizing the specific objectives is known as management. School management means running the school along the desired educational policies. It takes into account all aspects of the school (policies, material and human resources, programmes, activities, equipments etc.) and integrates them into a fruitful whole. Good school management motives the best efforts of the teachers and students (Atchoarena, 2017). School Management means running the school along the desired educational policies. It takes into account all aspects of the school (Policies, materials and Human Resources, programs activities and equipment) and integrates them to fruitful whole. Effective school leaders promote collaborative cultures. Schools need dedicated, value-led, competent and highly motivated school leaders who can encourage reflective practice and foster dialogue and cooperation among all school actors and with other stakeholders (Bhatti & Adnan, 2010). They ensure a supportive environment for teachers, where

teacher-teacher learning, time for feedback and reflection, and networking within and between schools is encouraged.

2.6 Influence of EMIS for student information management system on management of secondary schools

The use of a student information management system is essential to education (Hualiang, 2015). In addition to significantly reducing the workload of the staff involved in the relevant activity, an effective information and performance management system's content is crucial to managers and decision-makers in schools. Ngoma (2009) notes that as SIS become more integrated operational tools in schools, many school districts have to make decisions about the extent to which SIS affects student achievement and about the most appropriate SIS to adopt. According to Durnali (2013) student information management system significantly affects management of secondary schools.

Nwobodo et al (2017) studied on appraisal of security and safety management in public secondary schools in Enugu State. The study was guided by two research and adopted a descriptive survey design. The study was carried out amongst public secondary schools in Enugu State. Two instruments were used for data collection in the study namely, Check list and Questionnaire on Safety and Security Management in Public Secondary Schools. A sample size of 351 respondents was used for the study. This sample was drawn using multi stage sampling technique. Research questions 1 & 2 were answered using frequency and percentage while research question 3 was answered using mean and standard deviation. Results obtained from the study showed that the security devices for improving security in public secondary schools are not generally available, the emergency responses plans for managing safety threats in public secondary schools

in Enugu State are not adequately available, the respondents agreed on the adequacy of all the 9 items on security measures that should be adopted in managing school plants. However the study didn't point out how this affects the management of the secondary schools.

Ayeni and Orhewere (2021) assesed Safety Intelligence and Security Management in Public Secondary Schools in Epe Local Government Area, Lagos State. The research adopted a descriptive survey design. The respondents were selected via simple random sampling. Four hundred participants including 19 principals and 381 students were the targeted population for this study. Findings from the study showed that majority of schools have the basic safety and security apparatus but lack the knowledge and experience to employ them in the event of a disaster. Results also show that there is no subject in the school curriculum from kindergarten to secondary level that teaches on safety and security management. Public secondary schools in Epe LGA do not also have constituted disaster management committees or an emergency management plan. Most students however do not know how to use safety and security gadgets in their school premises. However the study was not conducted in the Kenyan context and didn't focus on management of secondary school as a result of EMIS for security.

Ngoma (2009) Explored the effectiveness of student information management system in Managing Student Performance in the state of North Carolina in the United States. The survey was conducted using semi-structured interview. Besides, a questionnaire was administered electronically to a group of 80 public school teachers and administrators for a return rate of 25 %. Respondents were selected in a systematically random fashion. From the findings, although many school districts are implementing Student Information Systems (SIS), there is little empirical evidence

about whether SIS use can improve student performance. The use of SIS significantly improves student performance.

Durnali (2013) studied the Contributions of E-School, a Student Information Management System, to the Data Processes, Environment, Education and Economy of Turkey. The study adopted a desk research approach and discusses how student information management in Turkey's Education has been handled before and after E-school system. The study concluded that the system helps the administrators, teachers and policy makers make accurate, fast analysis and decisions about such as immediate needs and development of education system by enabling them to carry out their task easily, efficiently, and timely manner. As a result, it helps them focus on the educational aspect more, the learning needs of students. However the study was a desk research and data not collected by involving participants which provided a gap for the current which filled the gap by using a mixed method approach.

2.7 Influence of EMIS for human resource management on management of secondary schools

EMIS is basically concerned with the process of collecting, processing, storing and transmitting relevant information to support the management operations in any organizations (Ajayi & Fadekemi, 2017). MIS makes management operations easier to collect, store and process the data and retrieve information easily when needed, which increases the efficiency of these companies (Al-Mamary et al., 2014). In education, information is crucial for the purposes of managing, planning and even evaluating the education system. Therefore, MIS has been used in the field of education, adopted in all fields of knowledge and practice thus giving rise to EMIS (Al-Najjar, 2016).

Developments in information technologies have been impacting upon educational organizations. Principals have been using management information systems to improve the efficiency of administrative services (UNESCO, 2015). Principals have started to make use of information systems in the gradually-increasing daily management staffs (Akar & Coskun, 2020). The reasons to use information systems can be stated as increasing effectiveness at work by processing information, increasing managerial effectiveness by meeting the need for information and gaining superiority in competitions by directing strategies (Yuen et al., 2013). School management information systems aim to provide support for the managing and educational activities of the school managers by processing information.

In other words, school management information systems increase effectiveness and efficiency by saving time and facilitating development of alternative solutions for sophisticated problems (Visscher, 2016). Information systems support not only information process but also innovations (Yoo, 2013). As being adaptable to changes, these systems are helpful to cope with the demands for change. Therefore, school management information systems improve the adaptation of the school to the environment. They enable the school to comprehend and define inner and outer information transfer. Thereby, school management both meets the demands and expectations of its inner (teacher, student) and outer members; and ensures that school activities are arranged accurately and on time (Pegler, 2012).

Introduction of school management information systems to schools have caused significant changes in roles and working styles of managers. School management information systems have changed school management in the areas of leadership, decision making, workload, human resource management, communication, responsibility and planning (Gurr, 2017). Strategically school management information

systems help the manager in determining the aims of the school, making long term plans, distributing resources, and forming educational methods of future, determining performances of teachers and success of the school (Telem, 2015). In this way, school management information systems can also be used as a tool to initiate and use educational leadership of the manager. School managers can make more efficient decisions when they get correct and up-to-date information by school management information systems (Christopher, 2013).

Human resource management in schools leads to starting and operating a school (Kuzminov et al., 2019). It helps in using human resources of school in the best way. The important people can be the principal, teachers, business staff all who require to be effectively managed. Human resources along with material, financial and time resources should efficiently be utilized if schools want to attain their goals effectively (Tadesse, 2011). As a result, any organization's efficiency could be achieved by effectively utilizing the abilities and talents of its current people resources (Beardwell & Claydon, 2007). Thus, its vitally important duty to manage capital and human resources effectively. In addition to maximizing possibly limited resources, school administrators must also integrate their resource management approach with the mission and vision of the entire school community. This is underscored by Kunwar (2021) who notes that human resource management systems enhances the productivity of HR which is akin to efficiency and its attendant consequences.

Decision making is the heart of educational management. Daily, problematic conditions that require decision making are based on the complicated and unexpected nature of school environment. For this reason, as a problem solver, the educational manager has to gather and analyze information continuously (Perez & Uline, 2013). Moreover, decision making has been faster, more frequent and more complicated in schools of

today. In order to make decisions under these conditions, gathering data that is continuous, up-to-date and that can be accessed on-time and analyzing and using this data is an obligation. Success of school development studies are mostly based on data based decision making. However school managers are not able to use the data efficiently in this aspect (Gentry, 2015).

According to Hanson (2014), school-based management places much greater emphasis on improving educational practice by creating conditions in schools that facilitate improvement, innovation, and continuous professional growth and this is successfully done through EMIS. In addition, Gamage and Sooksomchitra (2014) note that SBM through information systems identifies the individual school as the primary unit of improvement by relying on the 'redistribution of decision-making authority to stimulate and sustain improvements in a school'. The MOE has given schools greater autonomy in: the hiring of school staff, conducting on-the-job professional development for staff, creating programmes in schools to enhance student performance, the maintenance of the school compound and sourcing resources for their schools through information systems.

Hanson (2014) explains that through information systems school-based management can be done easily through the redistribution of authority and that the amount of authority redistributed can roughly exist on a continuum involving the decision-making process, with specific points identified as de-concentration, participation, delegation and devolution. Cheng and Chan (2016) notes that traditional school management practice relied on a 'central bureaucracy' that concerned itself with structural and political strategies to exert control over schools, and often hindered the effective use of human resources and the development of school culture to pursue education quality.

Smylie (2016) also notes that EMIS enhances teacher participation in decision-making. It gives administration access to critical information closest to the source of many problems of schooling, and increased access to and use of this information are thought to improve the quality of decisions. This implies that when decision-making and planning are decentralized, decision support is required at all levels of the organization not just at the top (Beardwell & Claydon, 2007).

Raby (2004) conducted another study on EMIS integration in public secondary schools in Uganda. The sample consisted of 12 secondary, 12 principals, 3 education officers, 3 curriculum developers and 20 students. Qualitative data were collected using interviews of principals, education officers and curriculum developers whereas questionnaires were administered to students. The study revealed that in most public secondary schools, EMIS application in human resource administration was the responsibility of the school principal. According to the study, EMIS could aid instructional supervision through facilitating decision making process, planning, organizing, communicating, influencing, coordinating and evaluating. A principal who was running a big school or institution, running various human resource areas like curriculum development, instructional supervision, staff and student, personnel administration, guidance and counseling, finance, community relations, construction and maintenance of facilities and special services could be tasking and time consuming. For the principal to function efficiently and effectively in the present computer age, he/she must rise to the challenge of adopting new technological resources and services in the management of the school.

Tadesse (2011) evaluated the practices and challenges of Human Resource Management (HRM) in some selected government secondary schools in East Shoa Zone (sample size: 285 teachers and staff). The study adopted descriptive survey

method. From the findings, inappropriate planning of teachers and staff, lack of proper recruitment and selection procedures, poor performance appraisal system, absence of facilitating trainings, and high turnover of teachers as critical weaknesses and limitations to function properly, let alone to achieve quality education. The study recommends that HR planning must ensure the recruitment, selection and placement of talented and committed teachers and staff in schools. Besides, training and development should be continuous, comprehensive and result-oriented. The appraisal system should also align individual performance expectations with goals of schools. However, the study was descriptive and focused on human resource management practices and management systems which provided a gap for the study.

Rafiei and Davari (2015) investigated the role of human resources management on enhancing the teaching skills of faculty members at Azad or Payamenoor University. The study adopted an experimental research design. The data was analysed by use of descriptive and inferential statistical. From the findings there is significant difference between the knowledge of laws and regulations and effective teaching index before and after the workshop on four indicators: evaluation of students, teaching methods, planning, behavioral patterns and rules and regulations PNU. So it shows the impact of targeted workshops and the role of education experts in the process of recreating human resource management in higher education systems. However, the study was conducted in a non-Kenyan context besides didn't look at Human resource management systems.

Nwafor and Nwafor (2012) investigated human resources management for effective teaching and learning in secondary educational institutions by male and female principals in Rivers State, Nigeria. The purpose was to identify the human resources available for effective teaching and learning and determine the degree of utilization of the available human resources in secondary schools in Rivers State of Nigeria. A

sample of one hundred and twenty (120) (74 male and 46 female principals) randomly drawn from a population of two hundred and forty-five (245) public secondary schools in Rivers State participated in the study. A 52-item human resources management for effective teaching and learning questionnaire for school principals was used in data collection. The questionnaire was validated and the reliability index was 0.78. The data collected was analyzed using simple percentages and z-test. The results indicated that 57.17% of the human resources are available with exception of the science teachers; 79.10% of the available human resources were adequately utilized, though 32.69% of mathematics and science teachers were over-utilized. It was, therefore, recommended that Government should employ qualified teachers particularly for mathematics, chemistry, physics, and other science subjects. However the data was collected using questionnaire only thus the study findings were bereft of triangulation from qualitative data.

Ngotho (2018) investigated the effect of Human Resource Management practices on student performance in public secondary schools in Kenya. The objectives of the study are to: establish the effect of training and development, management style, performance management, compensation and reward on student performance in public secondary schools in Thika West Sub-County Kiambu county Kenya. This study is based on three theoretical foundations: Expectancy Theory, Human Capital Theory and; McGregor's Theory X and Theory Y. The study adopted the descriptive survey design sample size of 100 teachers and 5 principles from the 13 public secondary schools in the sub-county. The study collected both primary and secondary data using a structured questionnaires and interviews. Data from key informants is analyzed thematically. Descriptive statistics and Pearson correlation are used to analyze the data. Based on the

findings human resource management significantly affects performance of public secondary schools. However the study focused on Humana resource management practices but not human resource management system providing a gap for the study.

On staff administration, Oyier et al. (2015) asserted that ICT has enabled allocation of work, attendance and leave management and performance appraisal, raising efficiency in task distribution, data collection and management. Oguta et al. (2014), noted that ICT helps in staff management by processing of voluminous records in a quick, meticulous, and impeccable manner easening making data retrieval. In supporting of this position Omori, Mabadeje and Isah (2015) by indicating that ICT can help in providing a good communication system in providing timely information internal and external users acquisition and dissemination in all institution including schools. This according to Mugo (2014) has improved efficiency in day-to-day school operational activities especially in managing information about students, staff and resources. Based on this realization Makewa et al. (2011) asserted that integration of ICT into secondary administrative processes enhance overall students' records by making it more accessible to many. However, Makhanu and Kamper (2015) further noted that ICT automation of admission process from enquiry by students, applying for admissions through electronic media, registration and enrolment using computers has improved management initiatives to adequately, handle both students and stakeholder related issues.

A study was conducted by Telem (2015) on the Computerization of school administration: Impact on principals' role: a case study of school 4 in Hougang, North Zone of Singapore. From the study it was found that ICT helped in streamlining administrative processes of the human resource especially in the area of communication. This is whereby, teachers used to refer to big log books to

know which rooms were available for booking and who booked same and for how long, but with ICT, they could see the schedule for an entire month and know who booked them and which date the rooms may be vacant. It was further noted that ICT was a very important tool for information dissemination. This is because it helped communicate whatever information was available to the staff the moment they logged –in as they read, know, and acted.

Cheryl (2015) conducted a study on EMIS Application in administration of physical resource in South Africa. The sample for the study comprised of 10 firms in Johannesburg, 10 C.E.O of these firms and 50 staff members randomly sampled. The study findings revealed that in the past few years, EMIS application in administration of physical resource has evolved beyond expectation. From the study, EMIS was found to be applied in administration of physical resource through online procurement, advertisement of the firm goods and transactions. The study looked into the application of EMIS in relation to companies. This study attempts to examine the application of EMIS in relation to human resource management in public secondary schools.

In Kenya, some school managers are able to monitor the movement of their students in school. For instance, State House girls High School in Nairobi, boarding students sign in using a biometric sign-in system when they arrive and leave school, while students in day schools are expected to sign in and out every day using the biometric system every day they get in and leave school. Recent studies show that, over public 100 schools in Nairobi are expected to install the biometric system to supervise their students while in school (Nyabwa, 2018). Apart from students, ICT can be used to supervise teaching and non-teaching staff. School management can use ICT to monitor teachers' class

attendance. Staff personnel can be monitored by use of time - attendance software where the staff can sign in as they arrive and sign out as they leave school.

2.8 Influence of EMIS for curriculum and instruction on management of secondary schools in Uasin Gishu county, Kenya

The Curriculum Management Process (CMP) is fundamentally concerned with effective teaching and learning (Mohale et al., 2020). The process consists of managing what students are expected to learn, evaluating whether or not it was learned, and seeking ways to improve student learning. Every subject in the school curriculum can only be learned with the help of instructional resources (Chonjo, 2018). They give children the opportunity to interact with words, symbols, and concepts in ways that enhance their reading, listening, problem-solving, viewing, thinking, speaking, writing, and use of media and technology skills. It therefore becomes imperative to have concerted efforts among parents, school and the government to make available important and necessary instructional materials to teachers (Reimers et al., 2020). This is justified by the fact that there is a positive relationship between student's performance and curriculum management as some studies indicated curriculum coverage as one of the important factors contributing to the performance of learners (Mudzanani & Makgato, 2016).Therefore, monitoring of curriculum coverage by school management team (SMT) will give learners more opportunities to pass as supported by Too, Kimutai and Kosgei (2012)who found that head teacher's inspection of work covered had positive relationship with student's performance.

EMIS has now become integral part of teaching and learning in schools. It provides opportunities for both teachers and students to learn how to operate in an information and technology age. EMIS are drastically changing schools syllabus in a number of

ways, demanding that teachers focus on new teaching methodologies instead of relying on traditional methodologies. As Hare (2017) puts it, the successful integration of technology in education is not simple, because it depends on such interlinking variables.

EMIS can help students to become independent learners capable of developing critical thinking and problems-solving strategies, collaborative works and inquiry (Manichander, 2020). It allows for information searches, computer modelling, team-work, brain-storming and revision. Teachers can use computers to make learning experiences more effective and to offer students access to a variety of learning tools, expert opinions and alternative viewpoints (Quarshie, 2015). Idihosa and Ero (2015) states that in computer assisted instruction; lessons production is guided by the learners' knowledge, skills, understanding, expectations as well as motivation. This implies that a computer is not an instructor in itself but rather a mere vehicle of instruction. It is a clear secret that the computer offers powerful features for facilitating learning. Utor and Agbi (2015) identified telecommunication and teleconferencing as another useful development in ICT where students can sit in their respective classrooms or research centres and partake in teaching without necessarily visiting each other.

EMIS can be used in various ways where it helps both teachers and students to learn about their respective subject areas (Rambrij, 2018). A technology-based teaching and learning offers various interesting ways which includes educational videos, stimulation, storage of data, the usage of databases, mind-mapping, guided discovery, brainstorming, music, World Wide Web(www) that will make the learning process more fulfilling and meaningful (Finger & Trinidad, 2012). On the other hand, students will benefit from EMIS integration where they are not bounded to the limited curriculum and resources, instead hands-on activities in a technology-based course is designed to help them to stimulate their understanding about the subject. It also

helps teachers to design their lesson plans in an effective, creative and interesting approach that would result in students' active learning. Previous researches proved that use of EMIS in teaching will enhance the learning process and maximizes the students' abilities in active learning (Jorge et al., 2013).

The integration of EMIS in classroom is getting more important as it help student in enhancing their collaborative learning skills as well as developing transversal skills that stimulates social skills, problem solving, self-reliance, responsibility and the capacity for reflection and initiative (Joyner, 2021). All these elements are core values that students need to achieve in an active teaching and learning environment (Ghavifekr et al., 2012). Similarly, in Malaysia the government has implemented the integration of EMIS in learning and teaching process in early 1970's. This is due to the importance of technology literate which produce critical thinking workforce to face and involve the country in the global economy (Hamidi et al., 2011). Accordingly, many schools were upgraded with computer's lab, the internet connection, smart white boards, LCD and other ICT tools and equipment.

Studies carried out in Europe by British Educational Communications and Technology Agency (BECTA) show, that United Kingdom (UK) government invested £1.8 billion in the national grid meant to transform curriculum and instruction in schools by the use of ICT of which 99% of secondary schools were able to acquire network and were connected to internet (Younie & Leask, 2013). On average, however, most secondary schools tend to utilize ICT for class presentations and displays only. Other aspects of curriculum and instruction, for example, lesson planning; updating schemes of work, records of work and evaluation of students seem to be done manually (Salome, 2020). However, teachers increasingly (50%) were using ICT to plan their lessons. Generally, teachers seem to have a positive attitude towards ICT use in curriculum and instruction.

This was evident by a number of teachers who stayed behind after school working hours to use ICT facilities available in the school (Albugami & Ahmed, 2015). This could lead to effective curriculum delivery hence enhancing proper management of school activities.

In United Kingdom (UK), teachers who use ICT as a tool for teaching are more confident and consistently use ICT in preparation and delivery of lessons. They perceive ICT as an important tool for teaching. Lessons are perceived to be more fun, interesting and easier to comprehend on the part of the students. Students feel motivated to learn hence the need for integrating ICT in teaching and learning (Goh & Sigala, 2020).

Recent studies carried out in Malaysia on ICT integration in education suggests that teachers need to be competent and possess mastery of ICT skills to enable them deliver instructions effectively. Ghavifekr and Rosdy (2015) notes that the MOE in Malaysia noted the need to integrate ICT into national secondary school curriculum. ICT was included as one of the transformative shifts in Malaysia's Education system. The shift aimed at providing and establishing more accessibility to internet in all national schools by 2013, have a video library for subjects they termed as critical and lastly to maximize distance learning by use of ICT. Through these measures, the Malaysian government intended to upgrade ICT skills in Education.

In Mozambique, Ghana and Philippines, schools were not able to come up with sufficient data to enable school managers monitor students' learning outcomes (Molina, et al., 2018). Ghana for example was found to duplicate educational data because students' marks were entered manually on paper and not by use of ICT With the use of

ICT, it is easy to capture, store and retrieve data for proper decision-making (Bentil, 2018).

Secondary schools in Nigeria utilize ICT in supervision of staff personnel (Jacob, et al., 2020). ICT is used to allocate duties to members of staff, both teaching and non-teaching. It is also used to manage teachers' leave days, appraising teachers and generally in collecting data of all members of staff. Performance appraisal of teachers is important as it makes teachers to be more competent in their duties by reducing teachers' absentees, contributing to improved management of schools (Ekundayo et al., 2013). The study found out that, teachers who had taught for considerable period of time used computers and the internet more than those with less than 20 years of teaching. Many schools have acquired enough computers but the school principals and teachers are reluctant to utilize them in their respective roles (Makewa et al., 2011). This is associated with negative attitude and school managers not confident on how data generated would impact on their specific roles.

In Tanzania, ICT is used to develop school timetable and offer library services. However, Tanzania has been experiencing challenges of internet connectivity which has made communication within schools by use of email inefficient. In addition, ICT use in curriculum and instruction is not in it's advanced stage. Further, it has not been clear how ICT has been used in school administration, professional development of teachers and for teachers' personal needs (Mwalongo, 2011). This may lead to limited use of technology in carrying out administrative tasks.

In Kenya's private schools especially in Nairobi, it is revealed that, pedagogical methods of teaching and learning are quickly changing with ICT incorporation in instruction whereby books are being replaced with flash discs and memory cards,

blackboards are being replaced by smart boards, while text-based assignments are replaced by ICT presentations and slide shows which are more simulative and creative (Oyier et. al., 2015). ICT is considerably reducing teachers' work load of making learners' progressive records and analyzing learners' exam performance. These private schools also utilize ICT to formulate and implement schemes of work, records of work and writing students' academic reports. ICT is also used to schedule classes for teachers.

Haddad and Jurich (2012) asserted that EMIS can assist in management of curriculum and instruction through enhanced supervision of student progress as well as in the improvement of school resources management. The specific ways in which EMIS can be used to in curriculum and instruction were outlined by Strickely (2011) who pointed out that EMIS can be used for a variety of tasks such as planning for lessons and monitoring of students' progress and time table construction. He further emphasized the importance of the head teacher keeping a digital timetable containing detailed records of the academic level and experience of all members of staff so that the school can utilize all the available skills that might enhance management. EMIS networks in large schools can also be used to indicate the rooms to be used for particular subjects within the timetable. Makewa et al. (2013) in a study to establish educators' perceptions of the importance and extent to which administrators use ICT in rural southern Kenya found managers ranking the use of ICT in curriculum and instruction as having a positive influence on school management.

A study carried out in Nairobi County on ICT in management of private schools reveal that, ICT was used effectively in curriculum and instruction, supervision of personnel and in control of finances (Kimuya et al., 2021). Private schools in Nairobi have

websites, use ICT in co-curricular activities, managing infrastructure and in school personnel. Use of ICT has made management of schools less demanding. In supervision of personnel, ICT is used in directing and controlling teachers' and students. In curriculum and instruction, ICT is used in timetabling, in managing exams, academic records and generally in teaching and learning processes. This shows ICT has been utilized successfully by most private schools in Nairobi.

Olayinka (2016) studied the contribution of instructional materials to the academic achievement of secondary school students in Social Studies in Ekiti State. The population for the study comprised of all Junior Secondary School Class II students from among which 180 were sampled. The instrument for the study was a 30 multiple-choice self-designed Social Studies Achievement Test (SSAT). The study generated four hypotheses that were tested at the significance level of 0.05. ANOVA and ANCOVA statistical tools were used to analyse the data collected. The study concluded that students who were taught with instructional materials performed better than those taught without. However, the study was conducted in a non-Kenyan context focused on performance of students in social studies and not other subjects and education management as a whole.

Mudzanani and Makgato (2016) quantitatively studied the school manager's role on the curriculum delivery in teaching and learning practices: a perspective from poorly and well performing schools in Vhembe District of Limpopo Province. Participants were purposefully selected from 10 secondary schools which were information rich to the purpose of the study. Questionnaires were administered to 300 learners from the five poorly- performing schools and also from the five well performing schools in Vhembe District of Limpopo Province. Data from questionnaires were analyzed using SPSS (Statistical Package for Social Sciences) and were reported in graphs, mean (M) and

standard deviation (SD) tables. The study findings indicated that school managers from well- performing schools had strong monitoring system to effect frequent testing of learners, content coverage earlier than end of June, and high lesson attendance by educators whereas poorly- performing schools had weak monitoring system only specializing on monitoring written work, non – completion of content coverage if not late than end of June, and very low rate of lesson attendance by educators. However the study was quantitative and bereft of triangulation with qualitative data providing a gap for the current study.

Agayo et al. (2018) investigated the influence of instructional plan delivery strategy on student learning in county secondary schools in Uasin Gishu County. This study utilized the teacher behavior continuum theory as espoused by Wolfgang and Glickman. The study focused on 21 county secondary schools targeting 21 principals, 390 teachers and 8400 students in all the County Secondary schools in Uasin Gishu. All the 21 principals of the county schools were purposively included in the study. Simple random sampling was used to select 30 % (117) of the teachers in the schools where the study was done. The researcher used questionnaires and interview schedules to gather the relevant information under the area of the study. Data was analyzed using both quantitative and qualitative techniques. The findings indicated that teachers try to prepare lesson plans that cater for all the different needs of the students and that time distribution in lesson plan was done such that all the planned activities were delivered in class as planned. Further, the study established that less than half of the teachers were familiar with dramatization, schemes of work and demonstrations. The study established that there was a significant relationship between instructional plan delivery strategy and student learning in county secondary schools in Uasin Gishu County. However, the study didn't focus on the curriculum and instructional system and

management of secondary schools but student learning which is just one of the components of effective managements of schools. Besides the study was limited to only county secondary schools.

Too et al. (2012) examined the influence of supervision of teachers by head teachers on students' academic performance in secondary schools in Bureti District, Kenya. Average mean scores of secondary schools in Kenya Certificate of Secondary Examinations (KCSE) results for the years 2004, 2005 and 2006 were used to create three categories of schools in the District: Highly Performing (HPS), Averagely Performing (APS) and Low Performing (LPS) Schools. All the schools whose head teachers had served in their stations for a period of three or more years up to 2006 were chosen. Simple random sampling was used to select teachers in every school and descriptive survey design was used to show the nature of relationships between supervision of teachers and students' academic performance. Questionnaires were used to collect data. The data were analysed using Chi-square and Pearson's Coefficient of Correlation. Results revealed that supervision had positive relationship with the schools' overall mean scores in KCSE examinations. However the study was quantitative which requires for corroboration using qualitative data.

Wekesa and Kisilu (2022) assessed how the planning for instructional resources influences academic performance. The study adopted descriptive survey research design with the target population consisting of 8 principals and 295 teachers from 8 upgraded extra county schools to national status in Western Kenya. A sample of 170 teachers was selected through simple random technique to be involved in the study. The instruments used to collect data consisted of questionnaire and interview schedule. Data analysis was performed using quantitative and qualitative forms. The study found that aside

many instructional materials required in schools, only text-books for students were supplied in adequate quantity.

However, learning resources for teachers (including reference books) were not adequately provided to these schools. ICT resources like computers were not adequately provided after the Extra County Schools in the region were upgraded to national status in Western Kenya. Correlation statistics showed that there existed no significant relationship ($p>0.05$) between instructional material planning dynamics and performance of Extra County Schools after they were upgraded in Western Kenya. However, the study was limited to extra county secondary schools only.

2.9 Influence of EMIS for financial management system on management of secondary schools in Uasin Gishu County, Kenya

Application of EMIS offers a wonderful potential for increasing school accountability, transparency and participation among various stakeholders (Bertot, Jaeger & G., 2010). EMIS has been successfully used in various activities ranging from monitoring campaign finance spending to reporting election fraud in through SMS messages. This underscores ICT's ability to empower stakeholders in civil society, government, and the broader population to achieve better outcomes in transparency and anticorruption efforts. With specific reference to the administration of school financial resources among other things, information and communication technology can help solve the centralization/decentralization dilemma by making relevant revenue and expenditure data easily available at all school levels. It can also be used to facilitate budget analysis and school programming and thus improving the timeliness of the school budget information (Olabe & Kahn, 2012).

Financial management is one of the most fundamental practices in any enterprise or business including schools and other educational institutes (Barr & McClellan, 2018). Financial management essentially means planning, organizing, directing and controlling the financial activities in schools so that the financial resources are used in an efficient and effective manner. Ismail (2022) financial management practice is the process of acquiring financial resources and measures to enhance the financial performance in firms. It has to do with setting up financial resources and making the best use of them for present and upcoming chances in order to enhance financial operations. The most popular financial management practices used by organizations include capital structure, bookkeeping rehearses, money planning, working capital management, settled resources drills for the board, and risk drills for executives. The financial management of a school must be organised if it is to be effective (Mupa & Chinooneka, 2015).

A study was conducted by Grey (2015) on EMIS application in finance administration in a firm in London. The findings of the study revealed that most institutions have accounting software packages to help produce statutory accounts and reports for bankers and management, as well as to help with the day-to-day control of its finances. One very popular package amongst small to medium UK businesses is Sage which also has modules to manage, for example, payroll and debt factoring facilities. The study established that spreadsheets were also widely used by finance departments to help manage cash flow. Application of EMIS in financial transactions made by the school helps in creating transparency. This prevents most of the school administrators from misusing the financial resources that are available in the school and thus channeling the resources to their appropriate designations. The increase in transparency in the financial management referred to by the World Bank is one of the central elements in the assumed democratizing

role of ICTs. This greater transparency would have been possible by means of two factors which usually characterize the digital revolution, and a third aspect far less explained (Almiron-Roig, 2017). ICT application has efficient and safer ways of carrying out financial transactions over a short period of time.

Another similar study carried out in London showed that majority of educational institutions had accounting software packages which enabled them to come up with statutory accounts (Zawacki-Richter et al., 2019). Bank reports and schools' management reports were done by use of ICT (Binuyo & Aregbeshola, 2014). Utilization of ICT enables schools use electronic banking to verify the status of their bank accounts in good time. This ensures that payments are received and paid timely. Utilization of ICT for accounting purposes needs typical software to be installed on computers which have to be interlinked. This enables all transactions to be generated automatically which in turn assist in formulating payrolls for staff, payment of school fees and in school procurement. However, the effectiveness of ICT use in control of school finances depends on the schools ICT environment. If a school has created a conducive ICT environment, data would flow smoothly between school departments. For example, from school accountant to the principal and back to the school accountant leading to better school management. Failure to use ICT in school financial management may lead to poor utilization of school finances resulting to delayed decision making due to lack of timely data. Use of technology is therefore crucial to all school personnel involved in management of school finances.

In New Zealand, the MOE funded schools through three ways: Operational funding or what is commonly as the Bulk Grant (BG), Staffing entitlements or the Teachers' Salaries (TS) and the Property funding for capital works (Salome, 2020). Operational funding dealt with schools' running cost which included maintenance of property,

wages of non-teaching staff, leases and rentals, purchase and depreciation of capital items and professional development of members of staff. Operational funding is calculated using school rolls. Roll returns was generated from the Schools Management System (SMS). Schools are supposed to submit accurate roll returns which enable correct allocation of resources from the MOE. The school's roll returns are verified by MOE using electronic attendance data got from schools (Martin et al., 2017). This was arrived at by using school's electronic attendance information and the schools roll return data. If the information got from the school was different from the MOE data, the school was contacted. This information shows that, schools in New Zealand used ICT in controlling finances.

India has a financial management information system (FMIS) whose duties are to generate and analyze financial school data which enables sound decision making in education sector (Mundkur, 2012). In India, FMIS enabled generation of data for school accounting, budgeting, and coming up with working capital reports, financial planning, modeling and ratio analysis. All state governments were mandated by the government to come up with their own state FMIS. State FMIS recorded all funds received from the state government for their schools' operations. These operations were salaries for members of staff, making of school budget and buying teaching and learning materials. Money received from communities, parents and NGOs were not included in FMIS not even grants. Therefore, in India, FMIS was used to control school finances by the state governments (Nirgude, et al., 2019)

In Nigeria, control of school finances is still done manually; there is no use of ICT in controlling school finances. List of supplies, inventory records, paying of bills and cost accounting is done manually. According to Cook (2018) time spent on these duties can be reduced immensely if only schools would use ICT as it enables accuracy and speed.

There is lack of transparency and accountability if ICT is not utilized in managing schools' finances. In Nigeria, the government expected school managers to have acquired basic knowledge in procurement to enable them make sound decisions in matters of school finances hence ICT was used in schools to plan and control finances (Oyier et al., 2015). Control of finances led to improved financial discipline as it was easy to store, retrieve and manage financial transactions. ICT helped school managers in carrying out this important role of controlling school finances as it provided accurate information not only to the principals but to the parents and government officials as well (Cook, 2018). Management of school finances is critical in any educational institution. With the application of ICT, school principals ought to have access to correct data for easy school management.

School administrators can adopt the use of EMIS in paying of their staff members, making orders for school supply (Cheryl, 2015). This enables the school administration to be able to keep record of all the transactions done. Thus they are able to gauge themselves on the basis of the amount spend and the amount received. This in turn gives the school administrators a chance to gauge how sustainable they are in terms of finance. Ngugi (2014) observed EMIS is becoming useful for recording and scrutinizing data in management of finances for schools which includes budgetary provisions, expenses, fees payments for students and accounting in general. Moreover Roberts and Sikes (2011) notes that as part of scheduling and controlling of finances, accounting process in schools entails the readiness of numerous information sources to manage which can be made available through EMIS inclusion in management systems for schools. Provision of budget as parts of school's accounting process are complex processes that require reliable, timely, comprehensible information to support management conclusions. Makhanu and Kamper (2012) discovered that secondary

schools' executives have exploited technology in forecasting and control of finances, which significantly enhanced discipline in managing resources.

Oguta et al. (2014) investigated application of ICTs in management of finances for schools on educational eminent standards management and convenient secondary school levels in Bungoma South Sub-County. The study showed that 40 percent of schools ICT is involved for SFM compared to 60 percent where ICT was never employed in SFM either fully or partially. Mbatia (2014) examined how ICT is used by principals of schools in Githunguri Sub-County for administration purposes. The findings revealed that ICT integration by school principals is rare in that they delegate matters requiring the use of ICT resources to school secretaries and deans of studies. Principals have therefore delegated ICT leadership to others in the schools instead of actually leading in ICT leadership.

According to Mbithi (2017) the concept of managing school accounts differs from that of keeping school accounts. Management of school accounts is the responsibility of school administrator. It involves budgeting and supervision of officers who keep the school accounts. Okumbe (2016) states that management of school accounts is concerned with preparation of school budget and monitoring expenditure which is basically involved with maintenance of appropriate record keeping , accounting and auditing procedures. EMIS can help managers to retrieve, evaluate information in relation to budgets. Budget making begins with formulating some fundamental assumptions that are pertinent to the institution which must be derived from the past experiences on the schools financial position. Administrators will identify the above issues with ease if the financial records are computerized. School enrolment is important during the budget making process. Students' databases will provide the

information of the enrolment rate of that year and the projections for the coming year. A budget is a management tool as well as a planning tool. School managers can utilize it well when it is captured and stored in a computer. Management of school records also entails supervision of officers who keep the school accounts. Secondary schools usually employ accounts clerks to do this work under the supervision of head teachers.

Several accounting documents are kept by these officers. These include the fees registers, cash books, petty cash books, accounts records registers and receipt books (Mbithi, 2017). ICT software and financial databases will improve efficiency in maintaining the books of accounts. Supervision by head teachers will also be easier with ICT. Preparation of final accounts for auditing can be done using computers. Income and expenditure statements and the balance sheets preparation can utilize computers and hence reduce the anomalies associated with manual system.

Simple supplies and procurement information is an obligation to Heads of schools when concluding budget examination and control. On the other hand Makewa et al. (2013) distinguished that school financial management information system would be simpler if ICT is adopted. Singh and Muniandi (2012) found that one of the factors that made administrators in Malasyia schools to adopt ICT tools in their schools was the foreseen advantages such as easier communication by use of short messaging of services (SMS) or through emails for schools which had connected to the internet, schools e-learning portal and school websites.

Regionally a research by Ziraba (2012) indicates that some schools in Uganda Central District had installed ICTs in their schools to support administration and management, ICT had contributed to improvement of efficiency in record management, grading

systems in schools and tracking students‟ academic progress. Menjo and Boit (2017) found that despite the challenges facing ICT integration in schools administration in Nandi North District, secondary school administrators‟ and teachers' understanding of ICT's use in the schools was very optimistic. Charalambous and Ioannou (2018) in their study in school administration among secondary school principals in Cypriot schools observed that Cypriot school administrators use ICTs in school administration. This implies that if school principals as leaders regularly use ICT in their administrative tasks they will encourage their teachers and bursars to integrate ICT tasks hence making their work easier. Countries in Africa have lately started to show micro-economic soundness required for education development and therefore the need to integrate ICT in education administration is real more than ever before (Miranji, 2017).

One of the ways that this can be fully realized is by making our education system and especially school principals in secondary school completely integrate ICT in the administration of the affairs in their school. According to Waema and Miroro (2014) many countries in Africa like Egypt, Mauritius, Rwanda and South Africa have embraced thorough national rules and approaches to entirely integrate ICT in management. FarrelI (2017) on a study on survey on ICT and Africa's education, notes that some African countries have made efforts to integrate ICT in education management. For instance, South Africa has established a comprehensive range of Educational Management Information System (EMIS) platforms that cover the acquisition, processing, dissemination and reporting of educational data at the national level and at the different education strata. The government has also come up with ICT policies. These policies have facilitated proper management of schools in South Africa.

A study was conducted by Grey (2010) on ICT application in finance administration in a firm in London. The verdicts of the study disclosed that most institutions use accounting software packages to make statutory accounts and reports for bankers and management, as well as to help with the day to day control of its finances. The study established that spreadsheets were a used by departments of finance to enable manage cash flow. According to Grey (2010), use of ICT enables schools advantageously of online banking which enables them to transact in prompt time, saving time and helping certify that payments due have been honoured and accepted, and also to operate the bank account within any agreed overdraft limit.. In school set up, ICT has widely been used in financial management. Accounting software and spreadsheets like MS Excel have been used widely in financial accounting (Karl, 2010). However, the extent to which ICT has been used to facilitate financial administration in public schools remains to be unclear.

Jeston (2014) eludes ICT enables sharing of data electronically. This calls for secondary school administrators to integrate ICT in their systems. The introduction of Free Primary Education in 2006 (FPE) and subsequently the Secondary subsidized Education has made schools to receive a large number of students thereby generating a lot of data. Mbithi (2017) states that for educational planners to succeed they need a lot of assistance and co-operation from institutional heads, classroom teachers and field officers in providing reliable data regarding the current education in the nation.

According to Almiron-Roig (2017), utilizing ICT in financial deals made by the school helps in creating transparency. This prevents most of the school administrators from misusing the financial resources that are available in the school and thus channeling the resources to their appropriate designations. According

to World Bank, ICT plays a critical role in ensuring financial management transparency. According to a study by Almeida (2021) entitled “Continuous Auditing: the Audit of the Future Manage”, it can be witnessed that the purchases records, financial plans, donation management, assessments and other financial deals performed by organization requires right records for citation resolve. The study noted that in various institutions, these records were maintained in hardcopies ICTs were introduced. Fortunately, ICTs accessibility and amalgamation into sectors of finance has made it promising and comfortable for finance officials to sort out all deals on-line via the system called an e-accounting. Almiron-Roig (2017) noted that the use of ICTs dramatically increased the speed of communication in organization. Intranet is an internal network set up by an organization to share data online. This enables communication to go on within the organization without involving physical movement. The intranet enables faster delivery of information to different departments. It also reduces distortions and duplication of information. Grey (2010) states that with ICT data can be shared electronically hence reducing workload. This calls for secondary school administrators to integrate EMIS in their managerial system.

According to Diamond and Khemani (2005) EMIS software improves the use and maintenance of accounts books which are: Cash books, fees registers, and petty cash and receipt books. The main areas of concern are keeping financial records, transfer, use and account for funds. Technology is used to keep and analyze financial data such as fees payment, allocation of budgets, accounting and auditing of school accounts (Oyier, et al. 2015). School managers can utilize ICT to make orders and pay staff members (David et al., 2019). Application and use of technology in financial management in schools has proved to be safe and efficient in carrying out all financial transactions within a limited period of time. Therefore, school managers should utilize

technology in controlling school finances thus enhancing efficient keeping of financial records. For a manager to monitor school expenditure, appropriate keeping of school records, accounting and auditing procedures are followed. With introduction of ICT, school managers are able to retrieve information concerning their schools' finances enabling the managers make informed decisions concerning their schools.

Kabaillah (2018) investigated the effect of financial management practices on financial performance of income generating activities in public secondary schools in Mombasa County. The investigation focused on a populace of the 34 principals out in the open optional schools in Mombasa County. Complete enumeration was done to focus on every one of the schools. The investigation found money related administration rehearses impacts monetary execution of salary creating exercises in broad daylight optional schools in Mombasa County. This was built up by numerous straight relapse condition for the autonomous and ward factors which demonstrates that if obtainment, planning, accounting and money related control are altogether appraised as zero, monetary execution of salary producing exercises would be 0.240. The autonomous factors clarify 83.9% of the varieties in money related execution as spoken to by R squared with accounting, planning, obtainment, budgetary control. This suggests different components excluded in this investigation contribute 16.1% of the variety in money related execution. However, the study focused on financial performance as the outcome of financial management leaving out other management out comes.

Phyliters et al. (2018) investigated financial management for effective schools: Bridging Theory and Practice through Competency Development among Secondary School Principals in Kitui County, Kenya. The study focused, on three key characteristics of secondary school principals which influenced their financial

management. Specifically, the study looked at; the influence of principals' training, principals' experience, principals' education level on effectiveness of financial management in secondary schools in Kitui central District. The study adopted descriptive survey design with both qualitative and quantitative data analysis approaches. Both descriptive and inferential statistics were used in data analysis. The mean, median, mode and percentages were used to analyze the data in order to meet the objectives of the study. The findings shows that the principals' training influences financial management to a very large extent and there is a very strong relationship between financial management training and effectiveness of financial management in secondary schools; the experience of a principal is very necessary in financial effectiveness of management and to a large extent the principals' education level influences effectiveness of financial management the influence of Principals' financial management on school physical facilities. However, the study only focused on the opinion of the principles and not other education administrators providing a gap for the study.

2.10 Influence of EMIS for school safety and security on management of secondary schools in Uasin Gishu County, Kenya

Safety is a concept that includes all measures and practices taken to preserve the life, health, and bodily integrity of individuals (Mubita, 2021). Safety is the condition of being protected from harm or other non-desirable outcomes. According to Nyakundi et al. (2014) school safety is an integral and indispensable component of the teaching and learning process. Therefore, in a setting that is hazardous and unsecure for both staff and students, no meaningful teaching or learning can occur. In order to minimize accidents and incidents, it is important to manage school safety and security

appropriately and foster an environment that promotes physical, mental, and social well-being. However, the persistent recurrence of safety problems in secondary schools poses serious questions that demand urgent answers if similar cases are to be avoided in future.

Information security is a concern, as secondary schools house an array of sensitive personal information, making them potentially attractive targets for security breaches. EMIS provides a platform for well managed information to safeguard important information for learning institutions (Farrell, 2017).

The exponential growth of information and information bearing materials are a result of the ever increasing growth of knowledge gives impetus for the need to organize information materials and to provide adequate security for school property (Dogara et al., 2022). EMIS enhances the protection of information bearing materials such as book and non-book materials and information systems from unauthorized access, use, disclosure, disruption, modification, or destruction in order to provide confidentiality, integrity, and availability (Gentry, 2015).

Information security systems typically provide message integrity in addition to data confidentiality and availability. Charalambous and Ioannou (2018) opined that for any information bearing materials and system to serve its purpose, the materials, the system and the information contained in them must be available when it is needed. This means that the physical materials such as books carrying the information, the computer systems used to store and process the information, the security controls used to protect it, and the communication channels used to access it must be functioning correctly.

Telem and Pinto (2016) noted that high availability systems aim to remain available at all times, preventing service disruptions due to power outages, hardware failures, and system upgrades. Ensuring availability also involves preventing denial-of-service attacks, such as a flood of incoming messages to the target system essentially forcing it to shut down. Authenticity In library, information security is necessary to ensure that information bearing materials or documents (electronic or physical) are genuine It is also important for authenticity to validate that both parties involved in the exchange of information and information bearing materials are who they claim to be.

Vissher and Wild (2017) asserts that site lighting at vehicular and pedestrian entrances and circulation areas should be continuous and sufficient to support a secure atmosphere as well as support appropriate surveillance. Appropriate and clear signage should be provided, including off-site and entrance signage as well as on-site signage that should include directional, cautionary, and parking signs for employees, visitors, service vehicles, and pedestrians. Signs should generally not be provided to identify sensitive areas. Landscaping elements should enhance security by deterring unwanted entry while not allowing criminals to conceal themselves from security personnel and CCTV systems.

Richmond (2017) asserted that the crimes, which are committed by some users of the academic institutions, have deprived many others from fully achieving their information needs. Vandalism, mutilation, defacement, theft, arson, etc. are problems regularly encountered by the materials of these schools. The commodity the institution promote: books and other information materials are valuable and expensive but are likely targets for criminal activities. The expected roles of the schools tend to lead it to criminal activities. The more the control, safeguard and security levels there are,

the less it resembles a school that is traditionally expected to serve as user. Theft of and malicious damage against books are difficult to combat because the risk of getting caught is very low, while the likelihood of success is high (Vissher & Wild, 2017). Criminal activities in academic institutions are not limited to library information materials alone but theft of properties such as handbags, purses, keys and notebooks are equally common. The extent, nature and rate at which these crimes occur vary from one academic institution to another. The causes by human agents relate to complete or partial loss of the school materials and this loss can be either permanent or temporary, making the materials unusable by other patrons of the school. The offenders of this type of crime are the patrons for whom the materials are collected to serve can be effectively guarded through EMIS (Young, 2013).

Video surveillance and closed-circuit television (CCTV) systems serve as a way to monitor and record security, deter crime and ensure safety. Advances in CCTV technology and reduction in cost have also made video surveillance a cost effective management tool for schools (Yuen et al., 2013) UNESCO (2015) noted that schools can use closed-circuit television (CCTV) to identify visitors and employees, monitor work areas, deter theft and ensure the security can also use to monitor and record evidence on clientele and staff misconduct in the school. CCTV systems are quickly becoming one of the most important and economic security and safety tools available to schools. According to Ajayi and Fadekemi (2017), the primary purpose of a CCTV system are detection, observe, monitor and record observation, provide real time information for detection identification, recording, provides after the tact material for assessment, analysis and review, usually with overlaid time, date and location information.

Ghavifekr et al. (2012) proposed a Cyber Girls summer camp program for middle school students. In that program, female students will learn about some of the security risks. The reason behind the summer camp is that most schools cannot afford bringing technologies to teach the cyber security awareness in class. They used computers, printouts, posters, and handouts to present these modules. Using the summer camp program with instructors to teach the female middle school students is useful. However, the limitation of this approach is that it only allows female students to participate. Moreover, it needs an annual budget for teaching and will not reach all middle school students in every state.

In addition to the online programs, visualization is another preferred method used in teaching students about security awareness. The method of visualizations is used to teach students of computer science about packet sniffers, authentication architecture, and network attacks through the usage of Macromedia's Flash software (Finger& Trinidad, 2012). Researchers have used this method according to the belief that visualization is beneficial for learning. Their tools can be reached through the web and can be run in classrooms for academic teaching and also outside classes for self-learning. The only limitation of these tools that have been created by Flash is that they are intended for the students of computer science who have some of the computer knowledge. According to the study Wako (2013) there was a survey for students who used these tools showing that students were satisfied with the tools.

In Pakistan, data base security was one of the challenges which affected use of National Educational Identification System (NEMIS) in schools. This was because most computers in schools were not secured with antivirus software thus making data not to

be secure from virus attack (Bariu, 2020). Unauthorized persons could have access to data very easily and could alter data because of lack of passwords. Data loss, manual database integration, lack of information sharing, non-availability of adequate student information, slow data dissemination process, slow internet, lack of enough ICT software and hardware and lack of finances were the major hindrances affecting NEMIS use in schools in Pakistan. Teachers were not educated on the use of the NEMIS software thus limiting use of ICTs in capturing and storing students' data (Oyier et. al, 2015).

Duszka (2015) investigated the effect of school safety on school performance using 359 public schools in the Miami-Dade school district. School performance is gauged by a school's combined FCAT score provided by the Miami-Dade Public Schools district. A mean school safety score is constructed for each school from the results of an annual school climate survey that assesses students' perceptions of school safety. It was found using a panel random effects model that, in elementary schools, a 1 percentage pointincrease in a school's mean school safety score increases a school's FCAT score by 18 points, on average. No relationship was found in middle schools or high schools. However the study was not conducted in the Kenyan context besides the study was quantitative thus limited from corroboration by qualitative data.

Fatma et al. (2010) determined the security problems experienced at schools; and to develop recommendations for tackling them. The study focused on three secondary schools, characterized with the most severe security problems interviewing 22 people by asking them open ended questions. The data were analyzed by qualitative techniques. The obtained results revealed that there were various problem sources threatening school security; the school policies and decisions were insufficient; and the school support services were not sufficient and effective as well. However, the study

was not conducted in the Kenyan context and didn't focus on the influence of security management systems on effectiveness of management of secondary schools.

Lukumon et al. (2020) analyzed the effect of school safety on students' academic performance in Amuwo-Odofin Local Government Area of Lagos State. A total of one hundred (100) teachers including school administrators were randomly selected from public schools. A structured self- developed questionnaire was designed in line with a 5-point likert scale and the instrument was administered to the respondents in order to ascertain the effect of school safety on student academic performance. The data was analyzed with simple percentage and non-parametric statistics of chia-square using Statistical Packages for Social Sciences (SPSS). Finding shows that public schools in do not have effective safety facilities and equipment to take prompt remedial action and also, the result shows that security and discipline rules perceived by teachers and students were not strictly enforced in most public schools in Lagos State. The achievement of the students in school is significantly affected by the school safety and security. However the study focused on the academic performance and not the overall effectiveness of the school management providing a gap for the current study.

Nyakundi et al. (2014) established why school management is not fully implementing MOE Safety Standards and Guidelines in Public Secondary schools in Marani District, Kenya. The Government policies, administrative factors, disaster management and emergency facilities exemplify the independent variables while school safety exemplify the dependent variable. The objectives of the study were to: establish the safety situation, outline the main causes of disasters, examine the constraints in the implementation of safety measures and explore major strategies put in place to prevent occurrence of disasters in public secondary schools in Marani District, Kenya. The study adopted a descriptive survey design and data was collected using one

questionnaire. Data was quantified using descriptive statistics like frequencies and percentages and finding presented in charts, tables and graphs. Thematic analysis was used to analyze qualitative data. The major findings of the study were the MOE safety standards and guidelines had not been fully implemented majorly due to inadequate funds and inadequate supervision. However, the study was quantitative thus providing a gap for mixed method design. Besides the study the researcher did not focus on school management as the dependent variable.

Udali (2020) assessed the levels of awareness of school safety measures among students and staff in public boarding secondary schools in Trans- Nzoia County, Kenya using descriptive survey research design. Simple random sampling and purposive sampling procedure were used to select boarding secondary schools. The total sample was 403 respondents which comprised of 20 principals, 143 teachers, 220 students and 20 security officers. Questionnaires, interview schedule, document analysis, observation checklist and focus groups were used as data collection instruments. Data was analyzed using descriptive statistical techniques that were frequencies and percentages. Data was presented in tables. The study established that, students and staff were not trained on safety requirements as per the Ministry of Education Safety Manual and therefore not aware of the safety measures. However the study focused only on boarding schools and not looking at school management as the dependent variable providing a gap for the current study.

Migiro (2012) investigated the implementation of the recommended Safety Standards in public Secondary Schools in Borabu District, Kenya. The objectives of the study were to determine the safety standards, establish the level of implementation and identify factors influencing implementation of safety standards in public secondary

schools of Borabu District, Kenya using survey design. Stratified random sampling method was used to select the required sample of 11 public secondary schools. Structured questionnaires were used to collect data from key respondents comprising 11 Head teachers and 44 Teachers from the 11 sampled public secondary schools. Observation schedules were used to supplement the questionnaires. The findings of the study revealed that most public secondary schools in Borabu District, Kenya were aware of the existing MOE safety standards, but majority of the schools had not implemented them fully. The study revealed that the status of School Safety was wanting, and that the public secondary schools that tried to implement the MOE Safety Standards faced number of challenges and obstacles, key among them lack of funds. However the study didn't focus on effective management of secondary schools as the outcome of safety and security management.

Kimanthi, Thinguri and Mugwe (2019). The aim of this research was to explore the influence of safety standards and guidelines on safety training in public boarding secondary schools in Kitui County. The study used securitization and disaster management theories. The investigation employed mixed methodology. The study embraced the concurrent triangulation design. From the research findings, it was clear that there was need to beef up security training in the learning institutions by having all teachers, students and non- teaching staff trained and fully equipped with disaster management skills such that they are able to combat calamities when they strike their institutions. However, the study focused on safety training in public boarding secondary schools as the outcome of safety and security management providing a gap for the current study.

2.11 The influence of EMIS on Education Management in public secondary schools

Education Management Information System (EMIS) can be defined as a system used to collect, integrate, process, maintain and disseminate integrated set of relevant, reliable, unambiguous and timely data and information to education leaders, decisions makers, planners and managers at all levels to perform their responsibilities to achieve the goals and objectives of education (Damin, Kadry & Hamed, 2014). EMIS refers to 'a system for the collection, integration, processing, maintenance and dissemination of data and information to support decision-making, policy analysis and formulation, planning, monitoring and management at all levels of an education system (Odusanya, 2019). All the information required to support all the activities of the education department, such as monitoring and evaluation, planning, and decision-making, is provided through an integrated human and computer-based process. The objective is to combine the numerous sources of information on educational management into a single, coordinated system to serve the entire nation.

Hoque et al. (2012) studied ICT utilization among teachers and principals of Malaysian schools. Quantitative method was used in this study with a representative sample of 260 school teachers, teachers-supervisors and principals. The finding of the research demonstrates that 84% of the teachers are not aware of national ICT policy though it exists. Finding shows that most of the schools (80%) do not have ICT policy at the school level though the facilities and equipment of ICT are available in most Malaysian schools. Almost all the teachers have a high level of skills in using computer and profoundly the basic skills needed for teachers in IT are attained by all the teachers. Likewise, 95% schools have photocopy machines and scanners while the multimedia projector is available in 85% schools. Besides, 72% schools are equipped with a video

camera, overhead projector and laptop. However, it is interesting that their expertise and skills are not integrated with educational management or with teaching/ classroom purposes. Rather they are used for daily administrative purposes. However the study didn't focus on the management of secondary as an outcome.

According to Shah (2014) there are positive effects of MIS on school management and administration include improved information accessibility, more effective management, greater use of school resources, decreased workload, improved time management, and better report quality. However there are a variety of barriers to the adoption of MIS, chief among them being a lack of time, confidence, or skills, a lack of training, a lack of senior management backing, and a lack of technical support.

Wemba (2020) appraised the Use of Education Management Information System (EMIS) and its Effects in the Effective Management of Secondary Schools in the West Region of Cameroon. The study determined the effect of Principals' integration of ICT facilities in EMIS on the effective management of their schools; and to find out strategies for improving the effectiveness of secondary school management vis-à-vis the use of EMIS. From a target population of 479 school Principals, 378 were selected from the various division and schools as a sample using the stratified, convenient and purposeful sampling techniques respectively. The instruments used for data collection included an observation guide, an interview guide and a semi-structured self-constructed questionnaire with items mostly identified from literature. A mixed method in collecting data was used. That is, self-delivery, the use of research assistants and social media services (WhatsApp and email). Both descriptive and inferential statistics were used in analysing the data collected. Findings revealed that: there is a significant relationship between the use of EMIS and planning of school processes for effective management (0.021); the integration of ICT facilities in EMIS significantly enhances

effective school management(p=0.001); and that the provision of information management expert to develop a situational MIS for each school and the provision of ICT tools to each school by government could help to improve upon effectiveness of secondary school as concerns information management. However, the study was not conducted in the Kenyan context limiting the generalization of the findings to the Kenyan secondary schools.

Tsereteli et al. (2011) investigated the impact of school culture on academic achievement level. Specifically, the influence of school management system on students' performance. The study represented the part of the National Assessment in Math. 234 public schools principals were administered with the questionnaire. The questionnaire consisted of several blocks: the new style of school management; evaluation of effectiveness of teachers' work; evaluation of effectiveness of various school boards; participation of teachers and students in professional trainings, conferences and scientific competitions; various events for students as well as for parents. Result showed that school management system predicts level of students' academic achievement. Specifically, among the best predictors are following variables: democratic strategies of class management, school board effectiveness, popular-scientific meetings, and teachers' democratic approach to students. However the study didn't focus on other elements of effective school management providing a gap for the current study.

Odhiambo (2017) investigated the influence of the use of Education Management Information System (EMIS) on the management of secondary schools in Nairobi City County. The objectives of the study were: to establish the extent to which ICT facilities are accessible to managers of secondary schools; find out the influence of the use of EMIS module for curriculum and instruction, human resource, school-community

relations and finance on the management on secondary schools. The study was guided by the Technology Acceptance Model, ICT impact assessment model and Fayol's theory of management. The study employed the descriptive research design with a target population of 1980 which comprised of 220 principals, 220 deputy principals and 1540 heads of department drawn from 24 public secondary schools and 140 private secondary schools in Nairobi City County. The study findings were that ICT facilities especially computers were fairly accessible to principals and their deputies but were not adequate for HoDs in most schools to enable frequent use. The findings further showed that the use of EMIS module for curriculum and instruction, human resource, school-community relations and finance influenced positively the management of secondary schools as it reduced the time to do routine tasks thus freeing up time for other school engagements by management. However, the study was conducted in Nairobi County combining both private and public schools. Besides the study left out EMIS for safety and security providing a gap for the study.

2.12 Gaps in Literature

From the review of literature, it is evident that there are a number of scholars that have carried out various studies on the application of EMIS in school administration. Hoque et al. (2012) conducted a study on the areas of ICT utilization among teachers and principals of Malaysian schools. The study findings revealed that majority of the teachers were not aware of the existence of ICT national policy. However, the study only concentrated on whether the schools administrations were aware of the existence of ICT policy in Malaysian schools hence failing to adequately addressing the influence of EMIS on effectiveness and efficiency of secondary schools Raby (2014) conducted yet another study on the application of ICT in Human resource in Uganda. The study

revealed that in most public secondary schools, ICT application in human resource administration was the responsibility of the school principal who needed to ensure that ICT is properly utilized. It is noted therefore that there is no recent study that touched on EMIS and effectiveness and efficiency of management in Public secondary schools. Available studies on the use of technology in education in Kenya Njoroge et al. (2017), Odhiambo, (2017), Ocharo and Kennedy (2017) with limited studies on EMIS in school management of public secondary schools in the Kenyan context. It is against this background information the study sought to examine influence of the use of EMIS on secondary school management in Uasin Gishu County.

CHAPTER THREE

RESEARCH DESIGN AND METHODOLOGY

3.1 Introduction

This chapter presents an overview of description of the research design and methodology adopted for the study. The chapter begins by looking at the research methodology, philosophical perspectives, research design, study area, the study population, sample size, sampling procedure and research instruments. Piloting of the study instruments, aspects of validity and reliability of research instruments, data collection procedure, data analysis and ethical issues considered during the study.

3.2 Research Methodology

Research methodology is essentially the "how" a certain piece of research is conducted in practice (Brooks & Normore, 2015). Methodology is the framework which is associated with a particular set of paradigmatic assumptions that are used in conducting research. More specifically, it deals with the methods a researcher employs when designing a study to guarantee accurate outcomes that meet the goals and objectives of the investigation (Dawadi & Giri, 2021). The study adopted a mixed-method methodology. A mixed-method methodology combines qualitative and quantitative methodologies to integrate both their strengths and obtain rich results (Creswell & Clark, 2018). This approach is beneficial because it allows each methodology to counteract the weaknesses of the other (Dawson, 2019)

3.3 The Research Paradigm

A philosophical framework that a research is based on is a research paradigm (Khaldi, 2017). It offers a basis of beliefs and understandings from which the theories and

practices of a study operate. A research paradigm consists of ontology, epistemology and research methodology (Al-Ababneh, 2020). Together, ontology and epistemology comprise research philosophy. Research philosophy combined with research methodology comprises a research paradigm (Dammak, 2015). The research paradigm adopted in this study is the pragmatic paradigm. The pragmatic paradigm refers to a worldview that focuses on "what works" rather than what might be considered absolutely and objectively "true" or "real." (Kaushik & Walsh, 2019). Pragmatists often combine positivist and constructivist principles in the same research project, using both qualitative and quantitative methods to investigate different components of a research problem. They believe that the optimal research methods are those that most successfully answer the research question.

Pragmatism was adopted because it is deterministic of mixed research methods approach and focuses on providing answers to the study's research question. Pragmatism opens the door to multiple methods, different world views and different assumptions, as well as different forms of data collection and analysis. In the pragmatism tradition verification or testing of hypotheses is often done deductively combining the positivist and constructivist principles (Al-Ababneh, 2020). Through the use of pragmatism empirical research was employed in order to statistically show the influence of Education Management Information Systems on Management of public secondary schools in Uasin Gishu County using quantitative and qualitative methods. Early pragmatists rejected the idea that social inquiry using a single scientific method could access truths regarding the real world. These pragmatists declared that truth could be judged by its consequences. The pragmatic paradigm is useful for guiding research design, especially when a combination of different approaches is philosophically inconsistent (Bruce-Frey, 2018).

According to pragmatism research philosophy, research question is the most important determinant of the research philosophy. Pragmatics can combine both, positivist and interpretivism positions within the scope of a single research according to the nature of the research question. Unlike positivism and interpretivism research philosophies, pragmatism research philosophy can integrate more than one research approaches and research strategies within the same study. Moreover, studies with pragmatism research philosophy can integrate the use of multiple research methods such as qualitative, quantitative (Collis & Hussey, 2014).

Pragmatist management researchers can be compared to architects. In the same way architects use whatever materials and methods needed to build the building they schemed on paper, pragmatists use whatever combination of methods necessary to find answers to research questions. At the same time, it has to be noted that pragmatists do not have to use multiple methods, rather they use method or combination of methods that advances a specific research in the best possible manner (Wilson, 2010). In line with the above discussion, this study adopted the pragmatic paradigm because the research questions guiding the study required both quantitative and qualitative data to be answered.

3.4 Research Design

A framework of research methodologies and procedures a researcher selects to undertake a study is known as the research design (Pandey & Pandey, 2021). According to McCrudden et al. (2019) research design is used to collect the relevant data and technique to facilitate the smooth scaling of the various research operations yielding maximal information. Research design also provides backbone structure to

researcher for planning of answering the research question or testing of hypothesis. The study used an explanatory-sequential research design.

The explanatory-sequential approach is a sequential design and is used when the researcher is interested in following up the quantitative results with qualitative data (Snelson, 2016). Thus, the qualitative data is used in the subsequent interpretation and clarification of the results from the quantitative data analysis. The qualitative (text) data are collected and analyzed second in the sequence and help explain, or elaborate on, the quantitative results obtained in the first phase. The purpose of this type of investigation is to validate the findings generated by each method through evidence produced by the other. Subedi (2016) notes that explanatory-sequential approach provides room for divergent findings which are valuable in that they lead to a re-examination of the conceptual frameworks and the assumptions underlying each of the two components. In quantitative approach the researcher employed data in form of numbers collected from respondents c by use of a questionnaire. Qualitative data was collected through interviews in order to describe the influence of EMIS on management of secondary schools in Uasin Gishu County.

3.5 Location of the Study

The research study was conducted in public secondary schools in Uasin Gishu County. Uasin Gishu County is one of the 47 counties of Kenya, located in the former Rift Valley Province coordinates 0° 31′ 0″ N, 35° 16′ 59.88″ E. Uasin Gishu County shares common borders with Trans Nzoia County to the North, Elgeyo Marakwet to the East, Baringo to the South East, Kericho to the South, Nandi to the South West and Kakamega to the North West. The County is divided into six sub-counties, Ainabkoi, Kapseret, Kesses, Moiben, Turbo and Soy with a total of 129 public secondary schools

evenly spread. The Uasin Gishu County Government positions itself to grow a knowledge-based economy in line with Kenya's Vision 2030 making ICT a cross-cutting sub-sector which is expected to contribute to the implementation of education management strategies to enhance service delivery in the County (maarifa.cog.go.ke., 2020). This too is in line with the national vision, which requires development programs to provide for youth participation including those in school. The County is connected to fibre optic cable thus, giving it access to fast internet connectivity. Besides there are limited studies conducted in Uasin Gishu County on how EMIS influences management of secondary schools. These altogether made the county suitable for the current study.

3.6 Target Population

The first step in determining the research sample is to define the research population of interest both clearly and accurately. According to Gupta and Gupta (2022) population is a set of all objects that have some common set of predetermined characteristics with respect to some research problem. Rinjit (2020) refers to target population as the group of people or study subjects who are similar in one way or more ways and which forms the subject of the study in a particular study. The target population for the study was principals, deputy principals, HODs in public secondary schools, County Directors and Sub-County Directors of education. The accessible population for the study was 1334 respondents which included 183 principals, 189 deputy principals, 955 HODs in public secondary schools, 1 County Director and 6 Sub-County Directors of education in Uasin Gishu County as presented in table 3.1 below.

Table 3.1 Target Population

Sub County	Tot no. of Ps	No. of D/Ps	No. of HODs	Subcounty Directors of education	County Director of education
Ainabkoi	22	22	150	1	1
Kapseret	17	18	85	1	
Kesses	39	40	195	1	
Moiben	32	34	160	1	
Turbo	30	32	150	1	
Soy	43	43	215	1	
TOTAL	**183**	**189**	**955**	**6**	**1**

3.7 Sampling Procedure and Sample Size

The study selected a sample frame, sampling technique and determination of sample size which are extremely important in drawing correct conclusions.

3.7.1 Sample frame

A sample frame is the group of individuals that can be selected from the accessible population given the sampling process used in the study and how they are accessed (Rahi, 2017). A sample frame is a source material or device from which a sample is drawn (Martin, 2018). It is a list of all those within a population who can be sampled and may include individuals, households or institutions. The sample frame for this study included all principals, deputy principals, HODs in public secondary schools, County Directors and Sub-County Directors of education of Uasin Gishu County.

3.7.2 Sampling Techniques

Sampling is the process of selecting units from a population of interest so that by studying the sample we may fairly generalize our results back to the population from which they were chosen (Coppock, 2019). Instead of collecting data from the total

elements of the population, the study zeroed in on sampling due to its proven cost, efficiency and ability to yield results quicker with high precision (Etikan & Bala, 2017). The study adopted both probability and non-probability sampling. Stratified proportionate sampling was used to select schools in each subcounty. The study purposively sampled the principals, deputy principals, HODs in public secondary schools for quantitative data collection while complete enumeration survey method was used for County Directors and Sub-County Directors of education of Uasin Gishu County for interview.

A multistage sampling technique was used to narrow down to principals, deputy principals, HODs in public secondary schools from each and every sub-county. A multi-stage sample is one in which sampling is done sequentially across two or more hierarchical levels. Multistage Sampling is the probability sampling technique wherein the sampling is carried out in several stages such that the sample size gets reduced at each stage (Manna & Mete, 2021;Martin, 2018). The first level is cluster sampling, where the clusters are formed out of the population, but further, these clusters are sub-divided into smaller target groups, i.e. sub-clusters and then the subject from each sub-clusters are chosen randomly.

Cluster random sampling technique was used to select the subcounties. Cluster sampling refers to a type of sampling method in which the researcher divides the population into separate groups, called clusters (Wang & Cheng, 2020). Cluster sampling is a sampling plan used when mutually homogeneous yet internally heterogeneous groupings are evident in a statistical population (Cameron & Miller, 2015). The population within a cluster should ideally be as homogeneous as possible, but there should be heterogeneity between clusters. Individual subcounties represented clusters such that each subcounty was proportionately represented depending on the

size of principals, deputy principals, HODs in public secondary schools within the subcounty. Stratified random sampling was used to sample principals, deputy principals, HODs in public secondary schools. Stratified random sampling is a method of sampling that involves the division of a population into smaller groups known as strata (Etikan & Bala, 2017). In stratified random sampling or stratification, strata are formed based on members' shared attributes or characteristics.

Simple random sampling was used to select the respondents to participate in the research study, but after it has been determined how many from each of the strata were to participate. Simple random sampling (SRS) is a method of selection of a sample comprising of n number of sampling units out of the population having N number of sampling units such that every sampling unit has an equal chance of being chosen (Singh & Mangat, 2013). The object of this sampling technique is to select groups that display variation on a particular phenomenon.

3.6.3 Sample size

Sample size is the number of observations used for determining the estimations of a given population (Kumar, 2018). Kerjcie and Morgan (1970) table in Appendix IV was used for determining the sample size. Thus, the sample size of principals, deputy principals, HODs in public secondary schools was calculated. The sample size of the County Director and Sub-County Directors for education was not calculated because of their small population and all the 7 were involved in the study through complete enumeration. Thus, from a target population of 1327 principals, deputy principals and HODs in public secondary schools in Uasin Gishu County a sample of 302 respondents. The sample size was distributed proportionally according to Neyman’s allocation formula (Singh & Micah, 2013). The purpose of the method was to maximize survey

precision, given a fixed sample size. With Neyman's allocation, the best sample size for cluster h was:

$$n_h = \left(\frac{N_h}{N}\right) n$$

Where,

n_h- The sample size for cluster h,

n - Total sample size,

N_h -The population size for cluster h,

N - The total population

Hence, distribution was as follows; the respondents were selected using simple random sampling.

Table 3.2 Sample size by Sub County

Sub County	Tot no. of Ps	Sample size for Ps	No. of D/Ps	Sample size for D/Ps	No. of HODs	Sample size for HODs	Total sample size
Ainabkoi	22	5	22	5	150	34	44
Kapseret	17	3	18	4	85	20	27
Kesses	39	9	40	9	195	45	63
Moiben	32	7	34	8	160	36	51
Turbo	30	7	32	7	150	34	48
Soy	43	10	43	10	215	49	69
TOTAL	**183**	**41**	**189**	**43**	**955**	**218**	**302**

3.8 Data Collection Instruments

According to Burns and Grove (2005) data collection is defined as the precise, systematic gathering of information relevant to the research purpose or the specific objectives, questions, or hypotheses of a study. Data was collected by use of a questionnaire and an interview schedule.

3.8.1 Questionnaire

Quantitative data was collected using a questionnaire. A questionnaire is a pre-formulated written set of questions to which respondents record their answers in a pre-determined order providing the researcher with data that can be analyzed and interpreted and best suited where the researcher wants to obtain standardized data (Kettunen et al., 2022). The self-completion questionnaire instrument has to be particularly easy to follow and its questions have to be easy to answer (Taherdoost, 2016). Questionnaire can establish rapport and motivate respondents, allows for doubts to be clarified, economical than other methods. In the current study questionnaire was the main instrument for data collection. The data was gathered by use of structured questionnaires administered to sampled principals, deputy principals, HODs in public secondary schools.

The questionnaire had close-ended questions and items used 5 point Likert scale commonly used in social sciences to measure perceptions, attitudes, values and behavior (Kettunen, et al., 2022). Close ended questions have some advantages: it is easy to process answers; it enhances the comparability of answers and makes them easier to show the relationship between variables. In surveys, data are standardized and

comparison is easy, however it takes much time to do it (Krosnick, 2018). The questionnaire had a total of 80 statements with 3 sections parts as shown in Appendix II. Section I contained questions relating to the demographic background of the respondent with 6 items. Section II had five parts with items relating EMIS and Section III management of secondary schools with a total of 74 statements. The items adopted a 5-point Likert Scale of (5 = Strongly Agree (SA), 4 = Agree (A), 3 = Neutral (N), 2 = Disagree(A), 1 = Strongly Disagree(SD).

3.8.2 Interview

Qualitative data was collected using interviews which is a popular approach in educational research. One-on-one interview is a data collection process in which the researcher asks questions and records answers from only one participant in the study at a time (Klassen et al., 2012). Semi-structured interview was conducted on face-to-face format with the County director and Sub-County Directors of education of Uasin Gishu County between 15 and 20 minutes. Interviews were transcribed verbatim and checked for accuracy. The interview method was used to ensure participants share information regarding their experience on how EMIS affects management of public secondary schools. One-on-one interviews are ideal for interviewing participants who are not hesitant to speak, articulate and can share ideas comfortably (Ratnaningsih, 2019).

3.9 Pilot Study

A pilot study is a strategy used to test the questionnaire using a smaller sample compared to the planned sample size (Ichikura et al., 2020). The number in the pre-test should be small, about 1% to 10% of the sample size (Kothari & Garg, 2014). In this study, 30 respondents participated in the piloting of the data instrument, which is 10% of 302 respondents. Piloting was carried out by administering questionnaire to 10

principals, 10 deputy principals and 10 HODs from 10 selected schools in the neighboring Trans Nzoia County. Participants in the pilot test did not participate in the final study. Though the similar characteristics to the intended participants and are considered thoughtful and critical. The pilot test participants were from various categories such as national, extra county, county and sub-county schools. The participants were encouraged to make comments and suggestions which were used to improve the items such as re-wording in the questionnaire and interview guides.

Pilot testing was conducted in order to detect any deficiencies and difficulties that respondents are likely to face when responding to the items. The purpose is to establish if any questions are likely to make respondents feel uncomfortable and to make sure that all the participants in the sample understand the questions in the same way. Moreover, the researcher was able to find out how long it would take to complete the survey hence regulate it. The pilot data was used to determine the validity and reliability of the research instruments.

3.10 Reliability and Validity

Data gathering and measuring procedure is valid only if it measures what it is supposed to measure, but this can be true if it is in the first place reasonably reliable (Creswell & Clark, 2018).

3.10.1 Validity of the research instrument

Validity refers to the accuracy and meaningfulness of inferences, which are based on research results McMillan and Schumacher cited in (Chepkwony, 2015). Validity is how accurately the data obtained in the study represents the study variables (Cooper & Schindler, 2011). According to Auspurg and Hinz (2014) validity is quality attributed to proposition or measures of the degree to which they conform to established knowledge

or truth. In nutshell, it is accuracy of the data obtained in the study to measure the variables of the study. The internal validity was used to show the extent to which collection, analysis and interpretation of data related to the research variables. Dunn (2020) noted that internal validity is to do with causality between two variables.

The two forms of validity used to ensure validity of quantitative instrument. The first one was content validity. Content validity is the degree to which instrument measure the indicators of a particular concept (Heale & Twycross, 2015). In order to demonstrate evidence of validity of the content, the researcher needs to first define the content that could be included in the test (Chepkwony, 2015). Then, for the content validity of the instrument, the researcher first gave the operational definition of key terms used in the study for both the independent and dependent variables which underpinned the meaning and purpose of the study. The content validity was achieved by ensuring relevance of the research results with theoretical approaches and literature reviews (Saunders, Lewis & Thornhill, 2012). The researcher also sought for guidance from the supervisors to examine the items measuring the specific construct to ascertain content relevancy and adequacy of items for each construct. All suggestion were factored in the final questionnaire.

Construct validity is about accuracy of data meaningfully representing the theoretical concept (McNeish, 2018).Construct validity was taken care of through operationalization of the research variables and ensuring the translation reflected the true meaning of the constructs. This was in line with Clayson (2018) who postulated that construct validity is how the researcher translates or transforms a concept or an idea into functional and operating reality. The researcher further consulted the supervisors in critically examine items in the construct to ascertain its suitability and operationalization of the research variables.

3.10.2 Reliability of the research instrument

According to Souza et al. (2017) reliability refers to the accuracy and consistency with which an instrument measures the target attribute. It is often associated with the method used to measure the research variables. Clayson (2018) define the reliability of a measure as the consistency of measures obtained in the use of a particular instrument. If a study is highly reliable then same results should be obtained anytime the study is carried out, assuming what is being measured has not changed.

Reliable instruments enhance the power of the study to detect significant differences or relationships actually occurring in the population under study. Reliability exists in degrees and is usually expressed as a form of correlation coefficient with ±1.00 indicating perfect reliability and .00 indicating no reliability and the most common method for testing the internal consistency is by use of Cronbach alpha coefficient (Cho & Kim, 2015). Cronbach alpha addresses itself to internal consistency, that is; the degree of interrelatedness among the items and where multiple summated scales are used like in this study (McNeish, 2018).

The formula for Cronbach alpha is:

$$\alpha = \frac{K\bar{r}}{(1 + (K - 1)\bar{r})}$$

Where

K = Number of indicators or number c

$\bar{r}$ = Mean inter – indicator correlation

The value one gets usually indicates the percentage of the reliable variance. For instance, if one gets a value of 0.7, it means that 70% of the variance in the scores is reliable variance, which means that 30% is error variance (Henseler, 2017). A "high" value of alpha was used as evidence that the items measure an underlying (or latent) construct, which was used. Reliability was determined through piloting, whereby 30 questionnaires were issued and the responses of the subjects checked against the research objectives. A Cronbach alpha value of $\alpha>0.7$ was considered reliable for the study. A Cronbach's Alpha that is closer to 1 is preferred because it indicates a good internal consistency of items in the scale (Ekolu & Quainoo, 2019). The results obtained from the pilot study assisted the researcher in revising the questionnaire to make sure that it covered the objectives of the study Fraenkel and Wallen cited in (Hayes & Coutts, 2020). The overall reliability of the instrument is 0.853.

In respect of pilot results the Cronbach's alpha for standardized items for each of the variables was as follows; Student information system management had an α of.703, Human resources management had an α of .726, Curriculum and instruction had an α of .708, Finance management had an α of.713, Security and safety management had an α of .751and School Management had an α of.756 as shown on table 3.3. This implies that the instrument was reliable as all the variables met the threshold of a minimum αof 0.70.

Table 3.3: Reliability

Variable	No of items	Cronbach's Alpha standardized items
Student information system management	12	.703
Human resources management	15	.726
Curriculum and instruction	11	.708
Finance management	8	.713
Security and safety management	11	.751
School Management	17	.756

Source :(Research Study, 2022)

3.10 Data Collection Procedures

Data gathering is crucial in research, as the data is meant to contribute to a better understanding of a theoretical framework (Zacharia et al., 2016). It is then of essence that selecting the manner of obtaining data and from whom the data was acquired and done with sound judgment, especially since no amount of analysis can make up for improperly collected data (Maxwell et al., 2017). The researcher secured an introductory letter from the Board of Post graduate Studies, Moi University to act as an identity and obtain a research permit from the National Commission for Science, Technology and Innovation (NACOSTI). After which authority to collect data from principals, deputy principals, HODs, Sub-County directors and County director was sought by giving the introduction letter to the school principals and explained the purpose of the study. The principals introduced the researcher to their deputy principals and HODs. After establishing a rapport, the researcher administered the research

instruments personally. The researcher gave adequate time to the respondents to fill the questionnaires and then collect them immediately or at an agreed date.

Table 3.4: Summary of Data Sources and Instruments

Objectives	Data Sources and instruments
To establish the influence of EMIS for student information management on management of secondary schools in Uasin Gishu County .	Questionnaires and interview schedules Principals, Deputy principals, HoDs, County Directors and Sub-County Directors
To assess the influence of EMIS for human resource management on management of secondary schools in Uasin Gishu County	Questionnaires and interview schedules. Principals, Deputy principals, HoDs, County Directors and Sub-County Directors
To analyze influence of EMIS for curriculum and instruction on management of secondary schools in Uasin Gishu County	Questionnaires and interview schedules. Principals, Deputy principals, HoDs, County Directors and Sub-County Directors
To evaluate the influence of EMIS for financial management on management of secondary schools in Uasin Gishu County	Questionnaires and interview schedules. Principals, Deputy principals, HoDs, County Directors and Sub-County Directors
To examine the influence of EMIS for safety and security management on management of secondary schools in Uasin Gishu County	Questionnaires and interview schedules. Principals, Deputy principals, HoDs, County Directors and Sub-County Directors

3.10 Data Analysis

According to Bergin (2018) data analysis is defined as a process that is conducted to reduce field information to usable size, organize and give meaning to the collected data. If reality is composed of discrete elements and events, then it is assumed that reality can be broken down to its parts, which in turn can be isolated and analyzed to determine the relationships between them. The qualitative data was analysed using themes and subthemes. To begin the quantitative data analysis process, descriptive statistics was calculated on the variables to summarize and describe the data collected. Reponses to the survey items were coded 1-5 depending on the importance of each as the statements were summed together for a composite score per category and eventually used for statistical analysis. Inferential statistics was used to reach conclusions and make generalizations about the characteristics of populations based on data collected from the sample with 95% as the level of confidence with the aid of SPSS software version 25.0. Simple and multiple linear regression analysis was used to determine the influence of EMIS for student information management, curriculum and instruction management, human resource management, finance management, school security and safety on the management of schools. Analysis of Variance (ANOVA) was used to test the significant amount of variance in the dependent variable. Regression analysis was used to test the hypothesis for this study. This explains the relationship between multiple independent or predictor variables and one dependent or criterion variable. In this case it explains the relationship between public secondary schools management and its predictor variables as indicated in the equations.

The simple linear regression model

$Y = \beta_0 + \beta_1 X_1 + \varepsilon$……………………………………………………………….(i)

The multiple linear regression model is as follows:

$Y = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4 + \beta_5 X_5 + \varepsilon$……..(ii)

Where;

Y is the dependent variable (Effectiveness of management)

β_0 is the Y-intercept

β_1, β_2, β_3, β_4 and β_5 are the regression coefficients of the three variables which are;

X_1 represents EMIS for student information management,

X_2 represents EMIS for human resource management,

X_3 represents EMIS for curriculum and instruction

X_4 represents EMIS for financial management

X_5 represents EMIS for safety and security management

While ε is an error term at 95% confidence level

The researcher used data condensation mode of analysis to extract important themes from qualitative data from the county and sub county directors. The researcher interrogated themes in light of the objectives of the study. The study highlighted subtle variations within the themes by summarizing the information pertaining to each theme, and capturing the similarities and differences in respondents' responses within each category. To show the categories, which appear more important, the analysis counted the number of unique respondents who referred to certain themes. The occurrence of two or more themes together consistently, indicates connections and suggests a cause-and-effect relationship. Data was presented in terms of tables ,graphs and pie charts.

Table 3.5 Summary of Methods Used to Test the Hypotheses in the Study

Hypothesis	Method of Testing
H_{01}: There is no statistically significant influence of EMIS for student information management on management of public secondary schools of Uasin Gishu County	Regression model and Analysis of Variance
H_{02}: There is no statistically significant influence of EMIS for human resource management on management of public secondary schools in Uasin Gishu County	Regression model and Analysis of Variance
H_{03}: There is no statistically significant influence of EMIS for curriculum and instruction on management of public secondary schools in Uasin Gishu County	Regression model and Analysis of Variance
H_{04}: There is no statistically significant influence of EMIS for financial management on management of public secondary schools in Uasin Gishu County. ($p \leq 0.05$)	Regression model and Analysis of Variance
H_{05}: There is no statistically significant influence of EMIS for safety and security management on management of public secondary schools in Uasin Gishu County. ($p \leq 0.05$)	Regression model and Analysis of Variance

3.10.1 Regression Assumptions

The following are the assumptions that the data must meet in order to conduct a multiple regression analysis. Before running regressions, a critical step of testing for assumptions was done. This was necessary since most statistical tests rely upon certain assumptions about the variables, which was used in the analysis. When these assumptions are not met, the results may result in a type I or type II error, or over- or under-estimation of significance (Osborne & Waters, 2002). Regression is an analysis that assesses whether one or more predictor variables explain the dependent (criterion)

variable. The study tested for linear relationship, normality, multicollinearity, autocorrelation regression assumptions: (Tabachnick & Fidell, 2001).

Variables are normally distributed: Regression assumes that variables have normal distributions. Non-normality distributed variables (highly skewed or kurtotic variables, or variables with substantial outliers) can distort relationships and significance tests. On-normally distributed variables (highly skewed or kurtotic variables, or variables with substantial outliers) can distort relationships and significance tests. This assumption can be tested in various ways including visual inspection of data plots, skewness, kurtosis. Histograms are a good way of getting an instant picture of the distribution of data (Lewis-Beck & Lewis-Beck, 2015). In this study the assumption was tested by use of skewness and kurtosis and histograms (Williams et al., 2013). Skewness measures the deviation of distribution from symmetry and Kurtosis measures peakness of the distribution (Cain et al., 2017). The values of skewness and Kurtosis should be zero in normal distribution statistics (George & Mallery, 2018). Mohammed et al. (2022) indicate that data skewness values must fall within +1 and -1 and kurtosis values must be in the range of +3 and -3.

Linearity of relationship between the independent and dependent variable (s). Estimates the relationship between dependent and independent variables if the relationships are linear in nature (Namazi & Namazi, 2016). As there are many instances in the social sciences where non-linear relationships occur, it is essential to examine analyses for non - linearity. If the relationship between independent variables and the dependent variable (DV) is not linear, the results of the regression analysis under-estimated the true relationship (Williams et al., 2013). Pearson Correlation coefficient was used to test for linearity. The Pearson correlation coefficient, *r*, can

take on values between -1 and 1. The further away *r* is from zero, the stronger the linear relationship between the two variables. The sign of *r* corresponds to the direction of the relationship. If *r* is positive, then as one variable increases, the other tends to increase. If *r* is negative, then as one variable increases, the other tends to decrease. A perfect linear relationship (r=-1 or r=1) means that one of the variables can be perfectly explained by a linear function of the other (Hazra & Gogtay, 2016).

Multicollinearity: Multicollinearity refers to a situation in which two or more explanatory variables in a multiple regression model are highly linearly. Multicollinearity will be tested with three central criteria: Correlation, Tolerance and Variance Inflation Factor (Williams, Grajales & Kurkiewicz, 2013). Multicollinearity was tested by use of variance inflation factor. The Variance Inflation Factor (VIF) measures the impact of collinearity among the variables in a regression model. The Variance Inflation Factor (VIF) is 1/Tolerance. VIF value should be ≤ 10VIF exceeding 10 indicates the presence of multicollinearity, Tolerance should be between 0 -1 (Sureiman & Mangera, 2020). The correlation coefficient between a factor and itself is always 1; hence the principal diagonal of the correlation matrix contains 1s'. This therefore means it is an identity matrix hence no multicollinearity (Morrissey & Ruxton, 2018).

Homoscedasticity: Homoscedasticity describes a situation in which the error term (that is, the "noise" or random disturbance in the relationship between the independent variables and the dependent variable) is the same across all values of the independent variables. Heteroscedasticity (the violation of homoscedasticity) is present when the size of the error term differs across values of an independent variable (Alabi et al., 2020). This assumption was tested through visual inspection of scatter plots (Flatt & Jacobs, 2019).

3.11 Ethical Considerations for the Study

Ethical considerations in research are a set of principles that guide your research designs and practices (Brennen, 2021). Ethical considerations in research help to determine the difference between acceptable and unacceptable behaviors. Ethical considerations are important in research as they prevent against the fabrication or falsifying of data and therefore, promote the pursuit of knowledge and truth which is the primary goal of research (Smith, 2015; Kessio & Chang'ach, 2020). Harriss, MacSween and Atkinson (2019) insist that researchers should consider possible ethical concerns their study might face before actually carrying out a research project. These ethical considerations prior to conducting the study included informed consent, voluntary participation, do no harm, confidentiality, anonymity and only assess relevant components.

Research authorization was obtained from the National Commission for Science, Technology and Innovation (NACOSTI), subject to authority from the County Commissioner and County Director Education, Uasin Gishu County, Kenya respectively. The researcher visited the secondary schools before doing the main research in order to be allowed to do the study in those secondary schools by the principals. To further abide by the ethical considerations, the researcher informed the participants about all the activities taking part in the research and make informed consent from them before starting research work. The main purpose of informed consent is that the participant is able to make an informed decision as to whether they will participate in the evaluation or not.

Prior to administering the questionnaire, a letter stating the purpose of the study and how the researcher was to maintain privacy, anonymity and consent form for participants to sign before they engage in the research as suggested by Harriss et al.

(2019) was attached. This form assured participants' rights were to be protected during data collection. Equally, the researcher was to ensure tolerance, honesty and patience with respondents while getting information from them. This is in consonant with Kessio and Chang'ach (2020); Hennink et al. (2020) who opines that many ethical principles must be accepted, such as being respectful to the individuals, entitling them to be autonomous, as well as providing protection to those who lack autonomy in addition to ensuring confidentiality and anonymity.

Any information related to participants or provided by the participants can't be made available or accessed by anyone other than the researcher under no circumstances. For purposes of anonymity the researcher wasn't aware of the participants' names and referred to them by the codes. The first page of the questionnaires offered information about the topic of research; the principle of confidentiality and anonymity was pointed out in the questionnaire as well. Additionally, when the questionnaires were distributed, the respondents were offered with further information about the topic. The respondents participate in the study voluntarily free from coercion and were free to withdraw their participation at any time.

CHAPTER FOUR

DATA PRESENTATION ANALYSIS, INTERPRETATION AND DISCUSSION

4.1 Introduction

The purpose of this study was to investigate the influence of education management information system on management of public secondary schools in Uasin Gishu County. This study adopted mixed method research design. Quantitative and qualitative data enabled the researcher to understand how respondents assigned meaning to their own experiences. The qualitative data collected from semi-structured interviews were combined with the quantitative data at interpretation stage (Creswell & Clark, 2018).

This chapter contains detailed presentation and discussion of data analysis and the results of this study. The findings were presented under the following headings: Response rate; demographic characteristics; descriptive analyses of Education Management information systems elements as student information management, curriculum and instruction management, human resource management, finance management, safety and security management and their extent of influence on management of public secondary schools. Findings were presented as per the study objectives followed by their discussion and interpretation.

4.2 Response Rate

A response rate is the ratio of the number of expected participants to the number of actual participants in a study. Response rate is commonly used to measure data quality hence the higher the response rate the better the quality of data collected and a low response rate could result in non-response bias. Response rate is therefore an important

measure for quality of education surveys as low response rates could potentially impact on the validity of estimates, analyses and inferences in education research.

For quantitative data, the general response rate was at 86.8%. A total of three hundred and two questionnaires were distributed in the field, the researcher managed to get back two hundred and sixty-two questionnaires which were correctly filled. According to Stedman et al., (2019) a response rate of 50% was enough for generalization of the study findings. On the other hand the respondents for qualitative data were achieved at 100%, the researcher managed to interview all the sub-county directors from the six sub-counties and the county director.

Table 4.1 Response Rate

Respondents	Sample	Percent	Returned Questionnaires	Response Rate (%)
Principal	41	13.6	32	10.6
Deputy Principal	43	14.2	33	10.9
HOD	218	72.2	197	65.2
Total	302	100.0	262	86.7

4.3 Demographic Characteristics

Demographic information gives information about the respondents which is important for the determination of whether the research participants form a representative sample of the target population for the purpose of deriving generalizations (Klar & Leeper, 2019). In this research, information regarding the demographic profile included: age bracket, gender, highest level of education, experience as an administrator type of school and number of students.

4.3.1 Gender of the Respondents

The proportion of males and females in the study was about 51.5% and 48.5% respectively. The gender distribution is summarized in Figure 4.1.

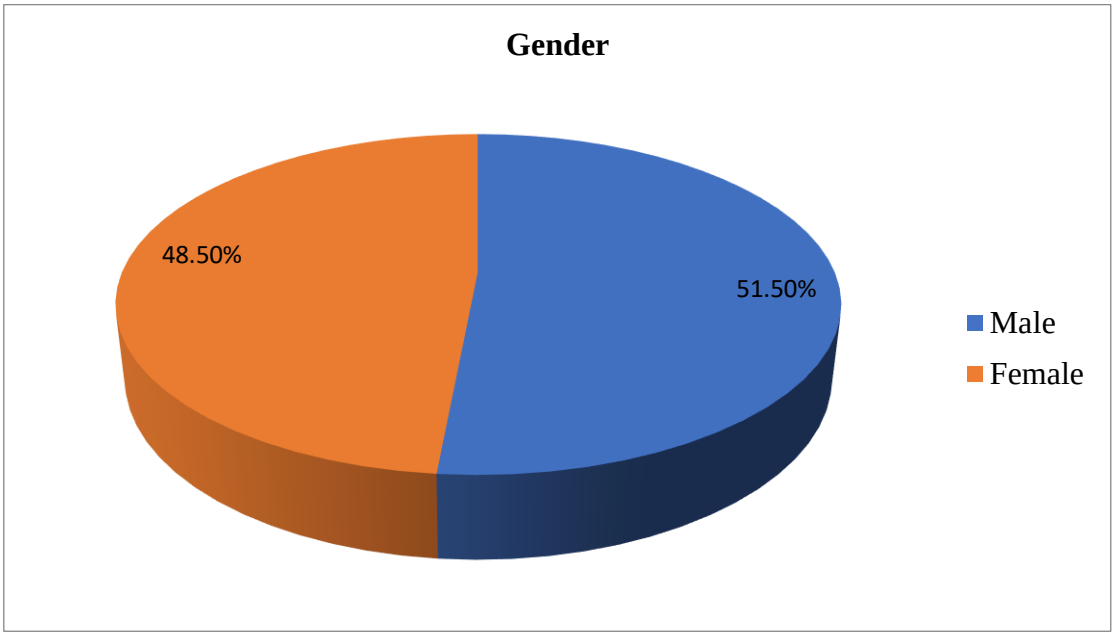


Figure 4.1 Gender of the Respondents

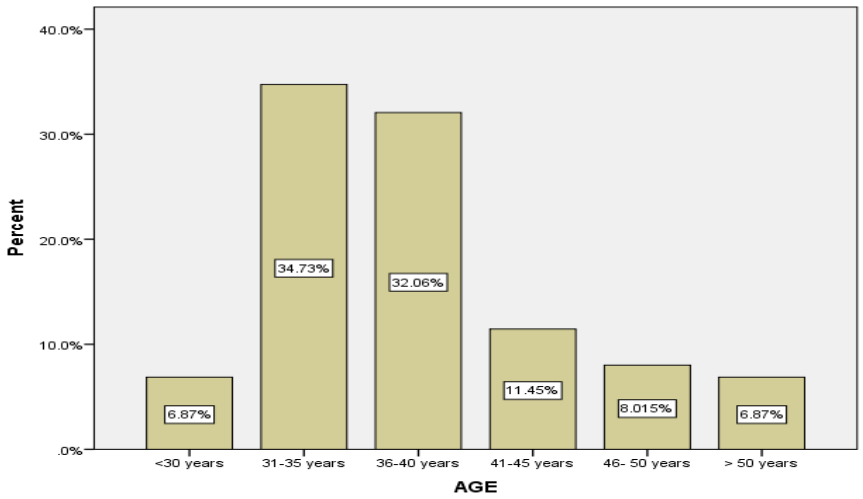
Source: Research study 2022

Most males are being trusted in management positions as a result it is well portrayed in the study that majority of the respondents were male, however the gap was small hence the female gender is well embraced in Kenya. Natia and Al-hassan (2015) reveal that male teachers use more ICT in their teaching and learning processes than their female counterparts. The significant differences in utilization of ICT amongst gender implies diverse perspective on the utilization of EMIS in management of public secondary schools which would enrich the study findings.

4.3.2 Age of the Respondents

The distribution of respondents amongst the age brackets between below 30 and above 50yrs were presented in figure 4.2 below

Fig 4.2 Age of respondents



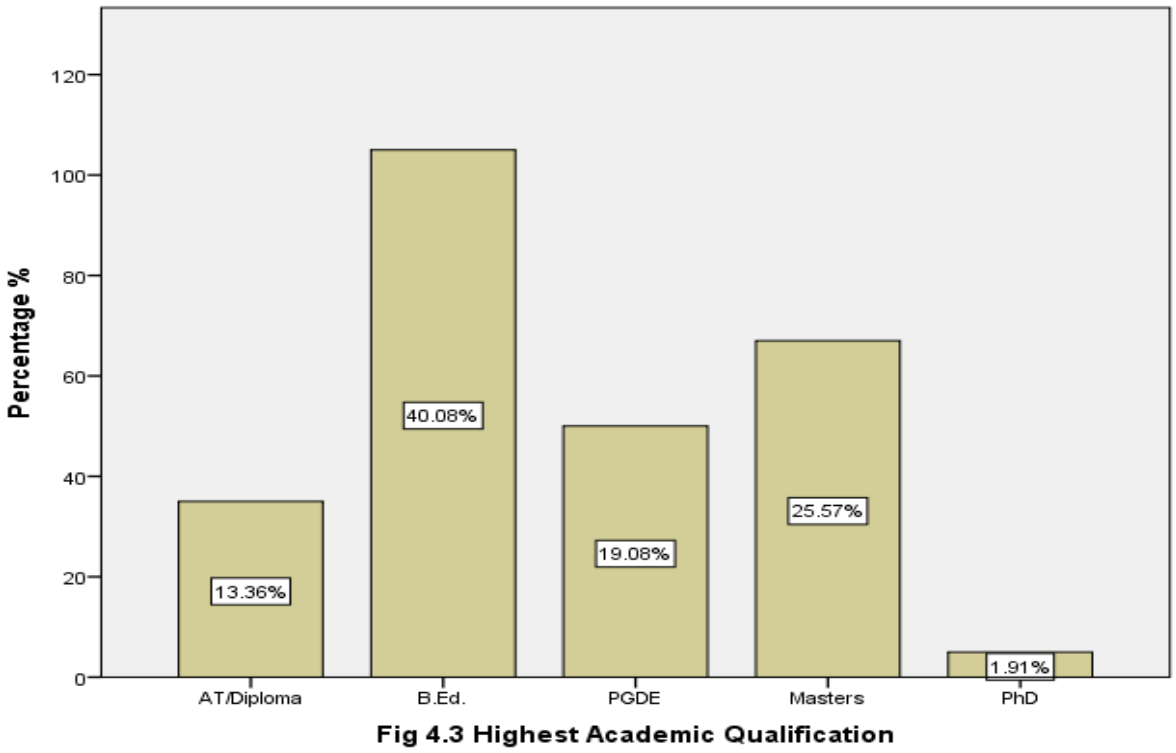
Source: Research study 2022

With slightly larger numbers in the middle age brackets 31-35 and 36-40years categories accounting for 91 (34.7%) and 84 (32.1%) while 41-45yrs (11.5%) and 46-50yrs (8.0%) of the respondents, respectively (Figure 4.2). Respondents below 30 years and those >50 years were equally distributed at (6.9%) and18(6.9%) respectively. This implies that the respondents in this study were within the working age and therefore provided reliable information in terms of relevance of education management information systems and management of secondary schools. Besides the findings echoes Stynen et al. (2015), who found that middle age categories are active in most organizations in Australia, striving to achieve more in their career as presented in this study that most of the respondents were between 31-49 years. It was shown by another research that the middle aged staff has a major impact on the usage of ICT tools in higher education for teaching, research and record administration; younger lecturers

showed greater use of ICT tools than older lecturers in higher education (Owan & Odigwe, 2020).

4.3.3 Educational Qualification

Figure 4.3: Highest academic qualifications summarized



Source: Research study 2022

In general the findings showed that 5(1.9%) had a PhD level, 67(25.6%) had masters, majority 105 (40.1%) had a bachelor's degree in education, 50(19.1%) had PGDE and 35 (13.3%) had AT/Diploma. Majority of the respondents had bachelor's degree in education and above. This implied that the respondents had the knowledge and skills on the effectiveness of EMIS on the management of public secondary schools. In line with Wanjala et al. (2011) effective management using educational technology requires adequate knowledge, skills and attitudes to enable teachers confidently use and integrate ICT in school management operations. They further reported that successful

integration of ICT into school management in developing countries like Kenya depend on how principals and teachers have been prepared to use ICT. In this regard, with higher level of education the school management is guaranteed with adequate knowledge, skills and attitudes which helps in selection, integration and evaluation of computer tools to support effective management of public secondary schools.

4.3.4 Number of years served as an administrator

The respondents' number of years of service as administrators was reported in figure 4.4 below.

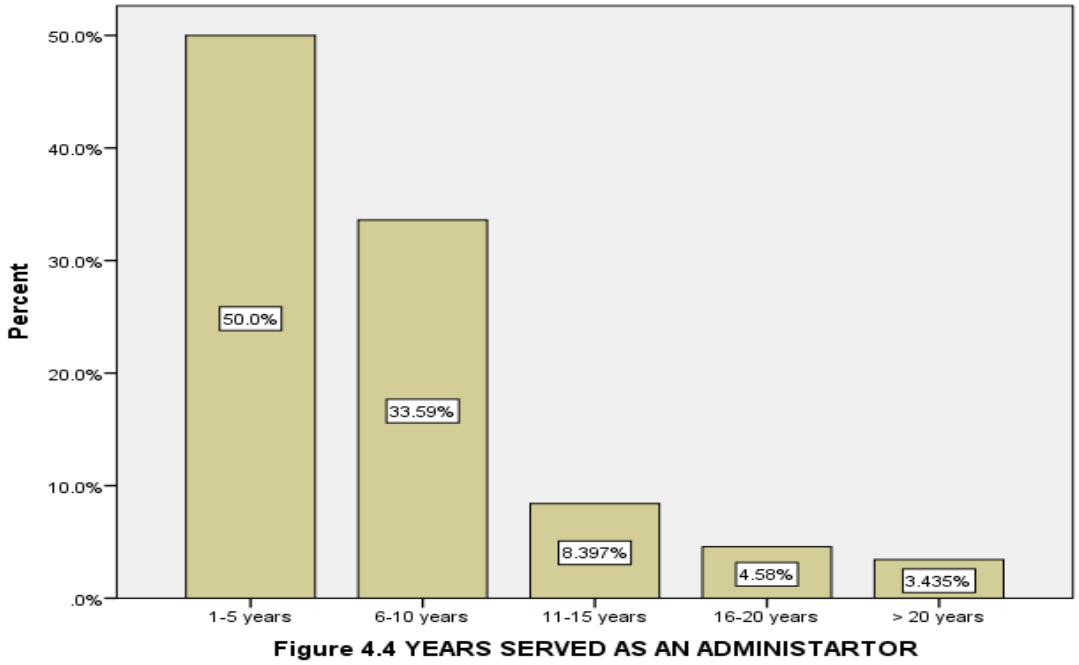


Figure 4.4 YEARS SERVED AS AN ADMINISTARTOR

Source: Research study 2022

The survey indicates that majority 131 (50.0%) of the respondents had worked in their current position (as a principal or deputy principal or HoD) between 1-5 years, 88 (33.6%) have been in the position for 6-10 years, 22 (8.4%) were in the position between 11-15 years, 12(4.6%) have been in the position for between 16-20 years while 9 (3.4%) had worked in their administrative position for over 20 years (see Figure 4.4).

This is presumed to have endowed them with adequate experience in management and use of technology in the management of public secondary schools. Therefore, the respondents could provide reliable information in answering the research questions based on their experience in the use of EMIS in management of public secondary schools.

4.3.5 Number of Students Enrolled in the School

The study also captured the students enrolment in the schools the administrators were from as presented in table 4.2.

Table 4.2 Number of Students Enrolled in the Schools

Number of students	Frequency	Percent
Below 500	57	21.8
501-1000	89	34.0
1001-1500	60	22.9
Above 1500	56	21.4
Total	262	100.0

Source: Research study 2022

It was observed that 57(21.8%) of the administrators were from schools which had below 500 students. Besides 89 (34.0%) of the administrators were from schools which had between 501-1000 students. In addition 60 (22.9%) of the administrators were from schools which had between 1001-1500 students, 56 (21.4%) of the administrators were from schools which had above 1500 students as presented in table 4.2 above. This implies that the respondents were from schools of varied student enrolments thus could give feedback which is reliable and worth generalizing in all schools.

4.3.6 Administrators by Level of School

The researcher was also able to collect data from administrators from all levels of schools in Uasin Gishu County as presented in table 4.3 below

Table 4.3 Administrators by Level of the Schools

Level of School	Frequency	Percent
National	23	8.8
Extra County	30	11.5
County	52	19.8
Sub County	157	59.9
Total	262	100.0

Source: Research study 2022

According to the findings 23(8.8%) of the respondents were from national schools, 30(11.5%) of the respondents were from extra county schools, 52(19.8%) of the respondents were from county schools and 157(59.9%) of the respondents were from sub-county schools. This showed a universal distribution of respondents from all levels of schools within Uasin Gishu County representative of all the public schools in Kenya.

4.4 Preliminary Tests of Quantitative Analysis of Data

(a) Multicollinearity Test

The Variance Inflation Factor (VIF) measures the impact of collinearity among the variables in a regression model. Values of VIF that exceed 10 are often regarded as indicating Multicollinearity (Salmeron et al., 2018). All variables involved in the linear relationship have a small tolerance. Some suggest that a tolerance value should be less than or equal to 1 (Tomaschek et al., 2018).

Table 4.4 Collinearity Statistics

Variable	Tolerance	VIF
Student information management	.188	5.311
Human resource management	.172	5.816
Curriculum and instruction management	.447	2.235
Finance management	.366	2.733
Security and safety management	.497	2.012

Source: Research study 2022

According to table 4.4 Variance Inflation Factor (VIF), Tolerance is within the threshold ranges hence no multicollinearity. All the VIF values ranged between 2.012 and 5.816 which were less than 10 implying that there was no multicollinearity. The VIF values for this research for the various variables were EMIS for student information management (5.311), human resource management (5.816), curriculum and instruction management (2.235), finance management (2.733) and safety and security management (2.012) in table 4.4. Thus, each of these variables had a VIF of less than 10, meaning that there was no multicollinearity amongst the independent variables.

(b) Normality Test

The study sought to find out how well the distribution of data could be approximated using the normal distribution. Consequently, skewness and kurtosis were employed as shown in table 4.5. Skewness measures the deviation of distribution of data from symmetry and kurtosis measures peakness of the distribution of data (Cain, Zhang & Yuan, 2017). The values of skewness and kurtosis should be zero in normal distribution

statistics (George & Mallery, 2018). Mohammed et al.(2022) indicated that data skewness values must fall within +1 and -1 and kurtosis values must be in the range of +3 and -3, if P-values are <0.05 for normally distributed data. From the finding as indicated on table 4.5 it is evident that all the data for the five variables were normally distributed.

Table 4. 5: Test for Normality

Construct	Skewness Statistic	Kurtosis Statistic
Student information management	- .668	.397
Human resources management	- .847	.147
Curriculum and instruction management	- .276	.340
Finance management	-.639	.211
Security and safety management	-.486	.138
Management of secondary schools	-.204	.021

Source: Research study 2022

Although it is assumed in multiple linear regressions that the residuals are distributed normally, it is a good idea before drawing conclusions to review the distributions of variables of interest (Schmidt & Finan, 2018). Histograms are a good way of getting an instant picture of the distribution of data (Lewis-Beck & Lewis-Beck, 2015). Therefore, histograms in figure 4.5 to 4. 9 were also employed in the study to test for normality on the data analysis that was used in the study that is; regression and ANOVA was based on the assumption that the data was normally distributed. The researcher made the evaluation by checking how far the data deviated from a bell- shaped normal distribution.

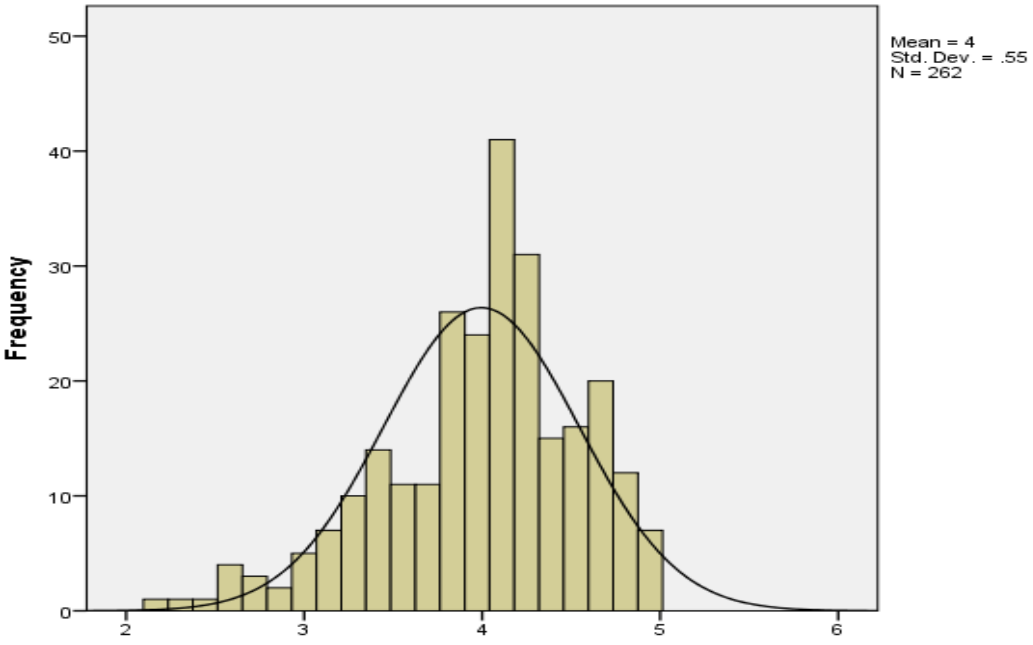


Fig 4.5 Student information system management

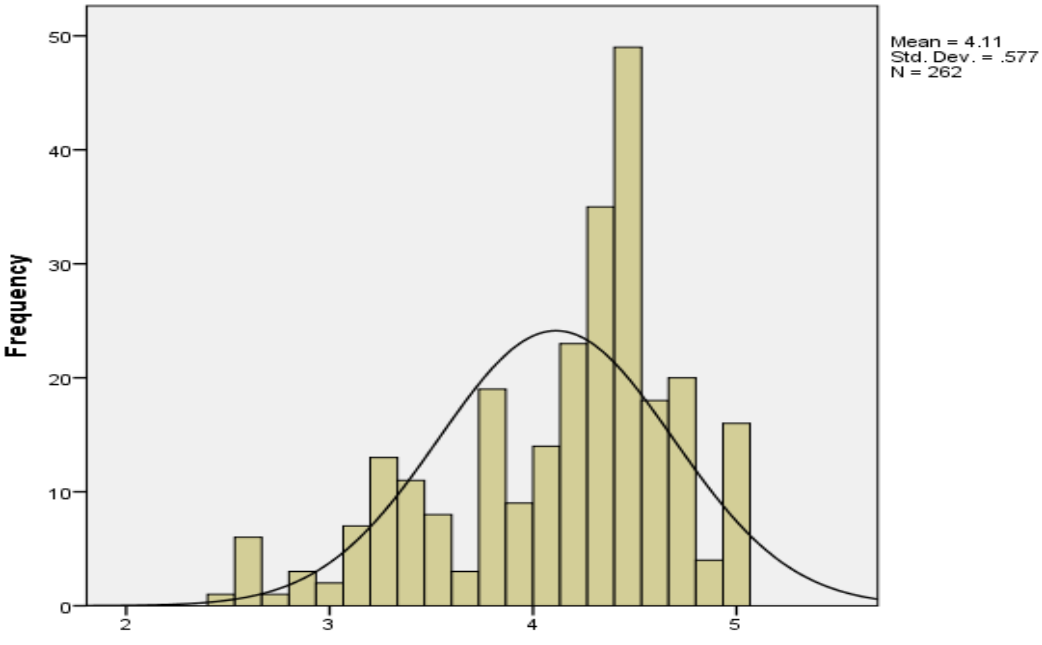


Fig 4.6 Human Resource Management

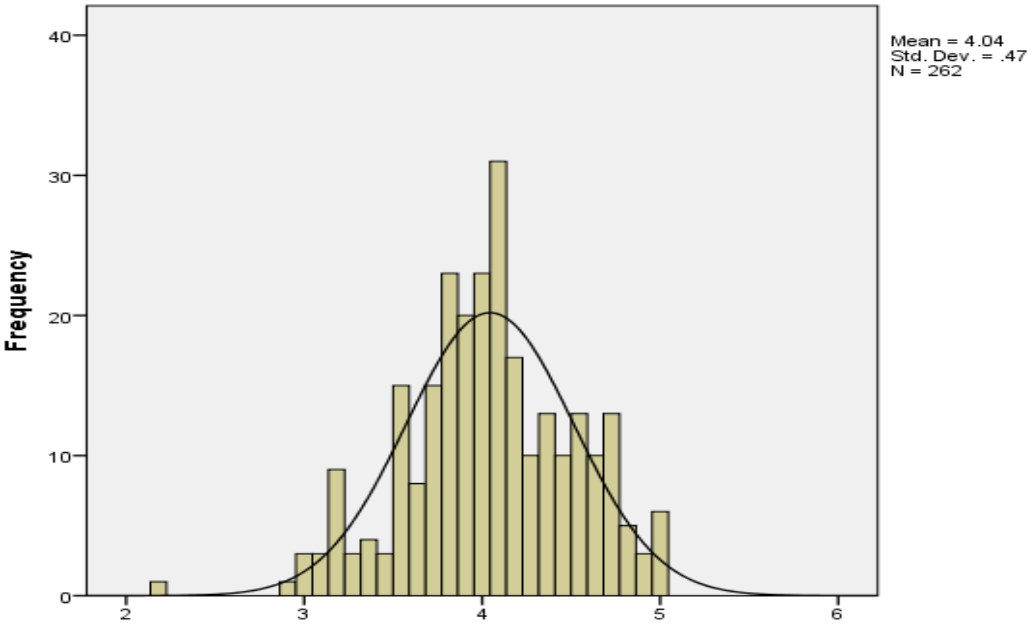


Figure 4.7 Curricullum and Instruction

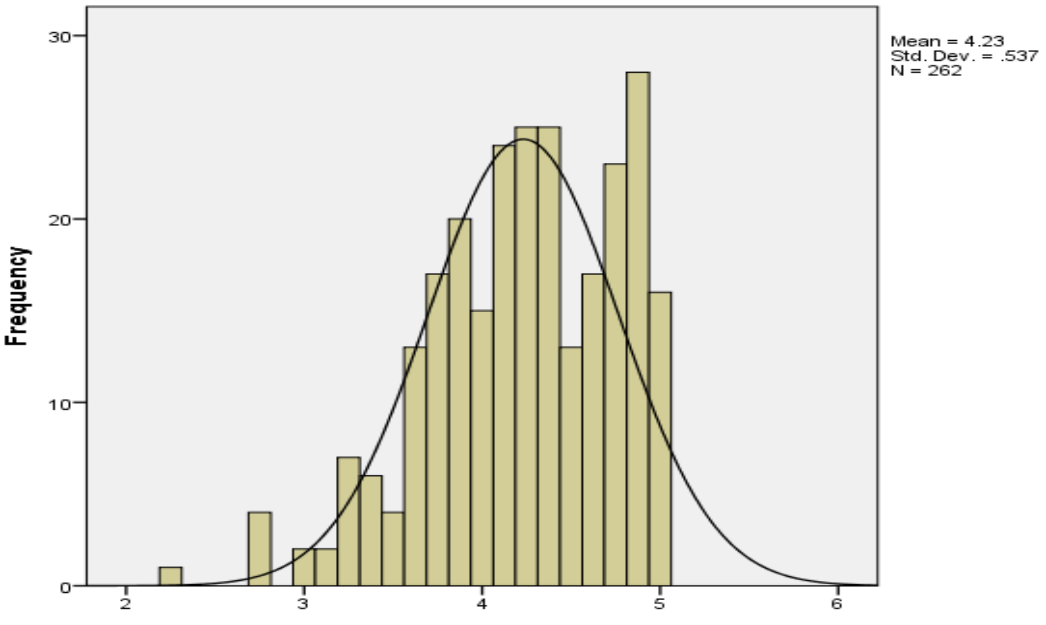


Figure 4.8 Financial Management

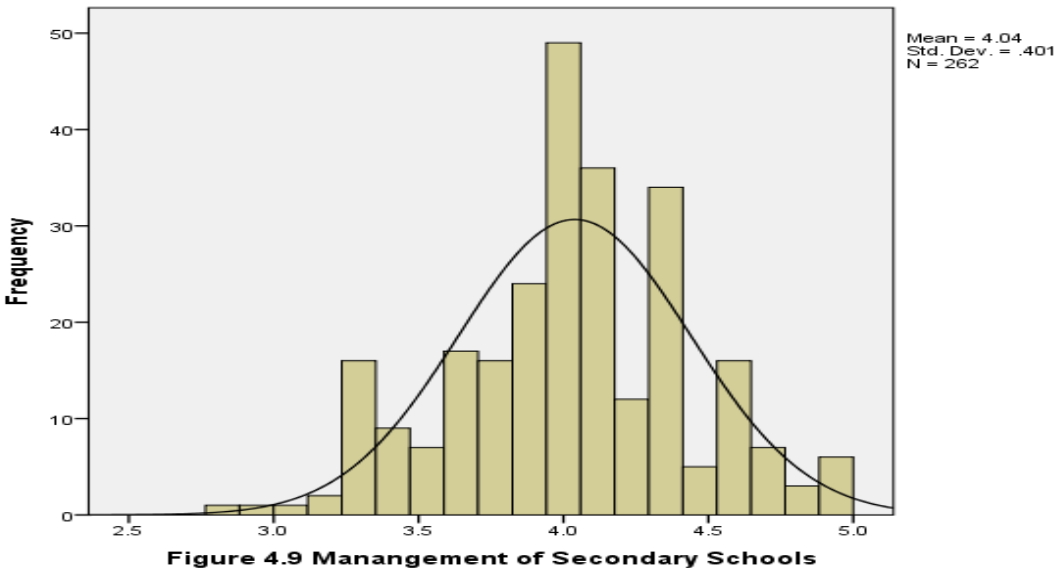


Figure 4.9 Manangement of Secondary Schools

(c) Assumption of Linearity

Linearity means that the predictor variables in the regression have a straight-line relationship with the outcome variable. Pearson's correlation coefficients were used to test linearity assumption. The purpose of using correlation was to identify education management information systems that provide best predictions for management of public secondary schools when regression analysis is run. The inter-correlations among the variables are shown in table 4.6 and figure 4.10 to fig 4.15. From the results, it can be seen that correlations among the elements of education management information system were significant. The points on the scatter plot graph produced a lower-left-to-upper-right pattern; the study therefore concludes that there is a positive correlation between the elements of education management information system and management of public secondary schools. This pattern means that when the score of one observation is high, we expect the score of the other observation to be high as well, and vice versa. Linearity assumption was therefore satisfied. This implies that all the elements education management information system under study jointly have a positive and significant impact on management of public secondary schools in Uasin Gishu

County. When the correlation values are not close to 1 or -1 is an indication that the factors are sufficiently different measures of separate variables (Schmidt & Finan, 2018). The closer the outcome value is to 1 means a strong correlation. A negative value indicates an inverse relationship. It is also an indication that the variables are not multi collinear. Absence of Multicollinearity allows the study to utilize all the independent variables.

Table 4.6: Correlations

	Student information	Human resources	Curriculum	Finance management	Mgt of Schools
Student information	1				
Human resources	.889**	1			
Curriculum	.597**	.537**	1		
Finance management	.666**	.678**	.706**	1	
Mgt of Schools	.792**	.800**	.699**	.723**	1

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

Source: Research study 2022

Table 4.6 above shows that the lowest correlation in this study was between management of secondary schools and student information management system ($r=.792^{**}$, $p<0.01$), human resources management ($r=.800^{**}$, $p<0.01$) curriculum and instruction, ($r=.699^{**}$, $p<0.01$), finance management ($r=.723^{**}$, $p<0.01$), indicating a strong positive relationship. The highest correlation was between human resource management and effective management of public secondary schools ($r=.800^{**}$ $p<0.01$), also giving a very strong positive relationship. However, this study utilized all the variables owing to their positive correlation with the management of public secondary schools.

Fig 4.10 to fig 4.15 Scatter plots for testing linearity

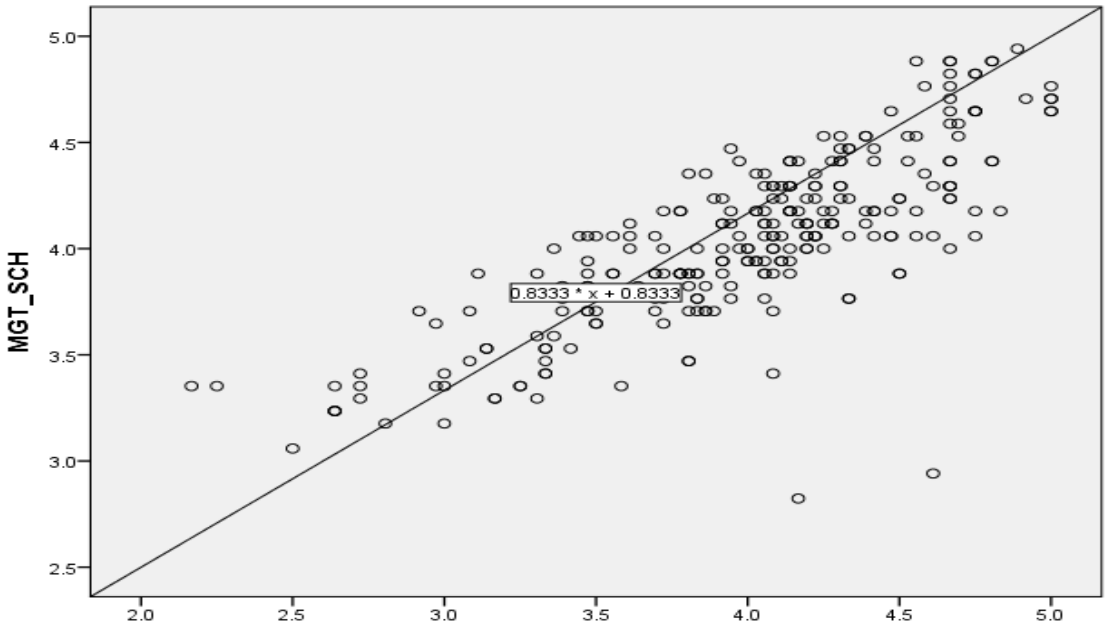


Fig 4.11 Student Information System Management

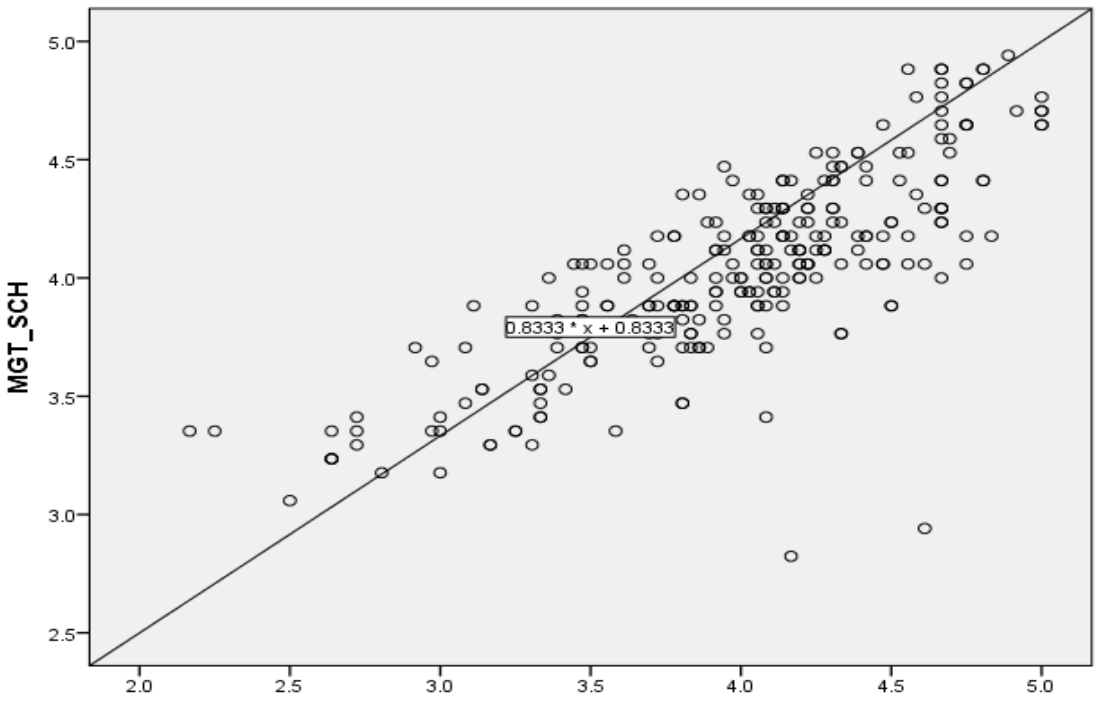


Fig 4.10 Student Information System Management

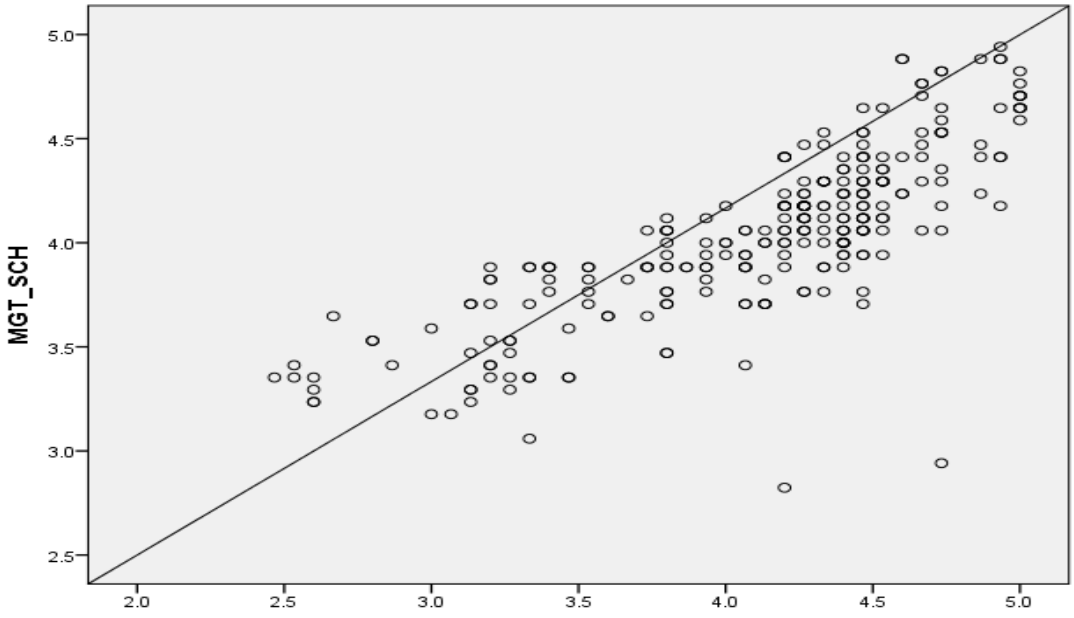


Fig 4.12 Human Resource Management

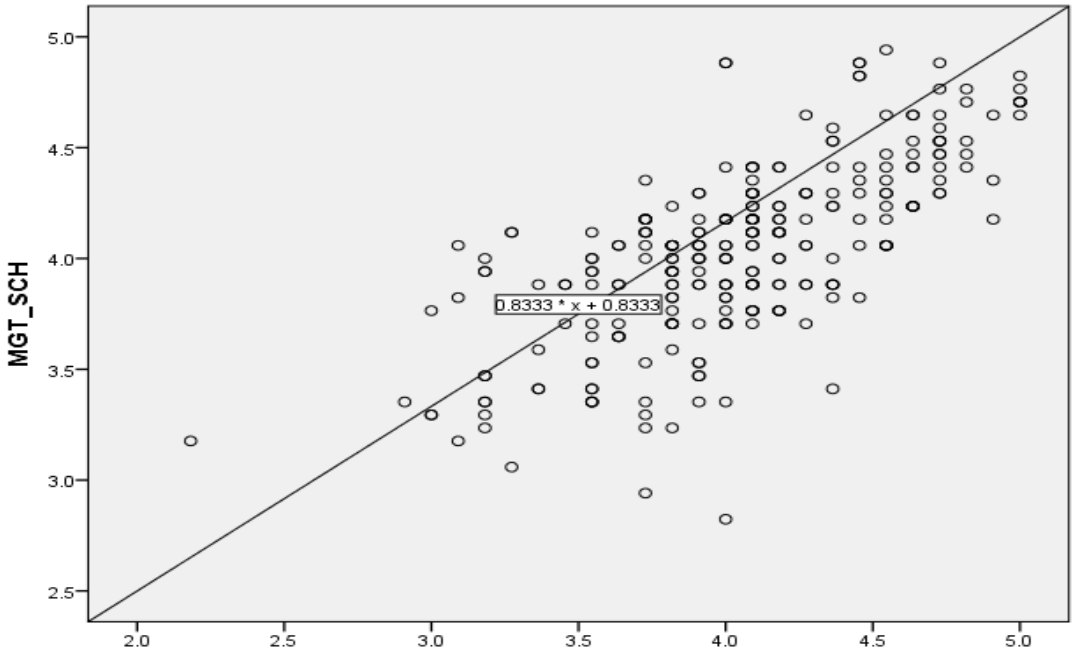


Fig 4.13 Curriculum and Instruction

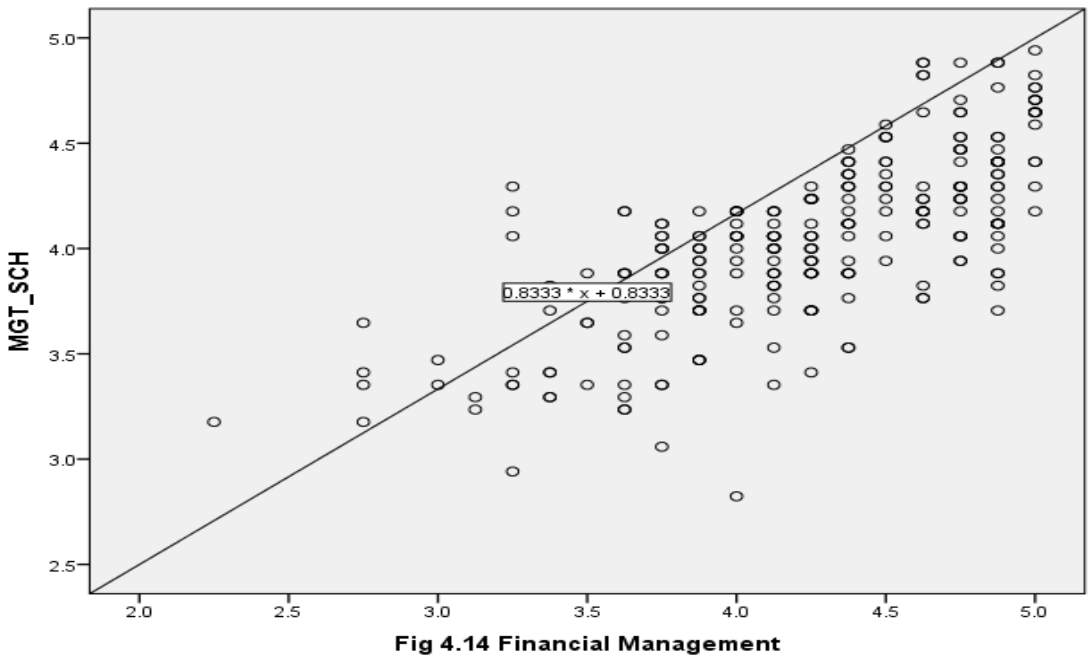


Fig 4.14 Financial Management

(d) Assumption of Autocorrelation

Auto correlation occurs when the residuals are not independent from each other (Abdulhafedh, 2017). The linear regression model was tested for autocorrelation using Durbin-Watson test. The Durbin Watson was 1.926 according to table 4.27 goodness of fit model summary. While Durbin Watson can assume values between 0 and 4, values around 2 indicate no autocorrelation. A conservative rule requires that values less than 1 and greater than 3 should raise an alarm. Values from 0 to less than 2 indicate positive autocorrelation and values from 2 to 4 indicate negative autocorrelation (Mathur, 2015). As a rule of thumb values of >1.5 and <2.5 show that there is no auto-correlation in the data (Abdulhafedh, 2017). From the data the Durbin Watson was 1.926 which is within the acceptable range.

(e) Homoscedasticity

Homoscedasticity means that the variances of all the observations are identical to one another, heteroscedasticity means they are different (Schmidt & Finan, 2018). The

assumption of homoscedasticity (literally, same variance) is central to linear regression models. Homoscedasticity describes a situation in which the error term (that is, the "noise" or random disturbance in the relationship between the independent variables and the dependent variable) is the same across all values of the independent variables. A scatter plot reveals the relationships or associations between two variables. From the scatter plots in fig 4.11 to figure 4.15 an approximate linear relationship between the elements of education management information system under study and management of secondary schools reveals a statistical condition of heteroscedasticity. For a heteroscedastic data set, the variation in the dependent variable differs depending on the values of predictors. The use of heteroscedastic data still provides an unbiased estimate for the relationship between the predictor and the dependent variable (Washington et al., 2020).

4.4 Influence of EMIS for Student Information Management on Management of Secondary Schools in Uasin Gishu County

The study sought to understand the nature and level of student information management in public secondary schools from the administrators' perspectives. This aimed at gaining an understanding of the current state of student information management and how they affect management of secondary schools in Uasin Gishu county. The results are presented below in table 4.7.

Table 4. 7 Descriptive Statistics on EMIS for Student Information Management

Statement	SD	D	N	A	SA	M	SD
	%	%	%	%	%		
Students' attendance has improved	0.0	3.4	20.6	43.5	32.4	4.05	.817
Students' health records can be tracked easily	0.4	10.3	11.5	46.2	31.7	3.98	.939
Utilization of student information on student discipline management support	0.0	6.5	18.3	33.6	41.6	4.10	.923
The system helps in monitoring fee payment of the students	0.0	9.2	12.2	43.9	34.7	4.04	.915
The students' performance has been effectively monitored	0.0	6.5	11.1	49.2	33.2	4.09	.835
There is easy retrieval of students' academic performance records	6.1	10.3	8.8	43.9	30.9	3.83	1.156
Records of students' extra-curricular activities, including awards and achievements are accessible	0.0	3.1	9.2	46.2	41.6	4.26	.750
The student performance has improved	0.0	5.7	18.7	43.9	31.7	4.02	.858
Administrators are notified about irregularities in student attendance	0.8	4.2	17.9	44.3	32.4	4.04	.863
Students' information system helps in providing referral for deviance cases	11.1	11.5	8.8	30.9	37.8	3.73	1.361
Records of past and currently written examinations are accessible	.8	9.2	17.2	36.3	36.6	3.99	.988
Student information system is functional thus statistics on students easily made available	3.1	8.4	18.3	42.0	5.1	28.2	1.027
Student Information Management						**4.00**	**.550**

Key: SD= strongly disagree; **D**= disagree; **N**= Neutral; **A**= agree; **SA**= strongly agree

M=Mean **SD**= Standard deviation **Source :**(Research Study, 2022)

From the findings 75% of the respondents agreed and strongly agreed that students' attendance has improved while 3.4% were in disagreement and 20.6% undecided (M=4.05, SD=.817). Besides students' health records can be tracked easily according to 77.9% who were in agreement while 10.7% were in disagreement (M=3.98,SD=.939). In addition, respondents were in agreement that student information systems can be utilized in supporting the management of student discipline (M=4.10, SD=.923). Besides, the respondents were in agreement that the system helps in monitoring fee payment of the students (M=4.04, SD=.915). In this regard parents or students can be invoiced, payments can be made and controlled from one place by the school. This is because Student Information System has accounting features as maintaining a general ledger, billing, receivable details, project funding and accounting details (Luke, 2022). According to the table 4.7 above 82.4% of the respondents agreed (49.2%) and strongly agreed (33.2%) that students' performance has been effectively monitored while disagreed at 6.5% (M=4.09, SD=.835). In addition, respondents agreed (43.9%) and strongly agreed at (30.9%) that there is easy retrieval of students' academic performance records and disagreed at (10.3%) strongly disagreed (6.1%) (M= 3.83, SD=1.156). Besides 87.8 % of respondents are in agreement that records of students' extra-curricular activities, including awards and achievements are accessible (M=4.26, SD=.750). The student performance has also improved according to 75.6% of the respondents who were in agreement (M=4.02, SD=.858). In addition, 77.1% of the respondents agreed and strongly agreed that administrators are notified about irregularities in student attendance (M=4.04, SD=.863). This is key in assisting the schools in monitoring the students' attendance and make data-driven decisions to improve their academic performance. According to majority of the respondents 68.7% are in agreement that students' information system helps in providing referral for

deviance cases (M=3.73, SD=1.361). In addition the observation of the County and Subcounty Directors on discipline cases amongst students, one of the respondents noted that.

> *"Discipline cases have been on the decline since students are aware that their deviant behaviors are tracked and documented for future reference. Based on records and tracking of indiscipline cases, students reform and deviant cases are on the decline* " (ED, 3)

The administrators were in agreement that records of past and currently written examinations are accessible with 36.6%, 36.3 % strongly agreeing and agreeing respectively while 10% in disagreement (M=3.99, SD=.988). Finally, the respondents were in agreement that student information system is functional thus statistics on student easily made available (M=3.84, SD=1.027). In the overall student information management had a mean of 4.00 and standard deviation of .550. Essentially, a student information management allows the school to make data points for lots of areas in one place so that it's easy to keep track of progress and performance (Luke, 2022). In response to the interview question " *How has student information management system affected the administrative performance of the public schools"*

One of the respondents noted that;

> *"Schools have been able to capture student information with ease, retrieval of student information has made student management very easy. The data has enabled the government to accurately allocate resources for bursaries and government capitation. Student behavioral records have been easy to store and retrieve*" (ED, 5)

Therefore student information system is functional thus statistics on students is easily made available. The implications of these results are that the management of public secondary schools should ensure that the use of student information management

system is potentiated so as to enhance effectiveness in management of public secondary schools.

4.4.1 Hypotheses testing

The study hypothesized that:

H_{01}: There is no statistically significant influence of EMIS for student information management on management of public secondary schools in Uasin Gishu County

The findings in terms of model summary, ANOVA and regression coefficients showed the effectiveness of EMIS for student information management on management of public secondary schools.

Table 4.8: Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	.792[a]	.627	.626	.245	1.796

a. Predictors: (Constant), EMIS for Student information management
b. Dependent Variable: Management of Public Secondary Schools

From table 4.8 above, the R-value showed a simple correlation value of the independent variable to the dependent variable, which was 0.792. This indicates that the independent variable and the dependent variable have a clear positive correlation. According to R squared value EMIS for Student information management (independent variable) clarified .627 or 62.7 percent of the variation in the dependent variable (Management of public secondary schools) in the model. The value of adjusted R squared was 0.626 an

indication that there was variation of 62.6 percent on management of public secondary schools due to changes in student information management system at 95 percent confidence interval. This shows that 62.6 percent changes on management of public secondary schools in Uasin Gishu County could be attributed to student information management. The statistical significance of this value was reported in the ANOVA table 4.9 where the analysis results revealed the following;

Table 4.9: ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	26.323	1	26.323	437.414	.000[b]
	Residual	15.646	260	.060		
	Total	41.969	261			

a. Dependent Variable: Management of Public Secondary Schools

b. Predictors: (Constant), EMIS for Student information management

Results in table 4.9 above revealed a significance of F statistics (437.414) is 0.000 which is less than 0.05. This implies that there is a significant relationship between EMIS for student information management and management of public secondary schools. The null hypothesis was tested and indicated that there is a statistically significant influence of student information management on management of public secondary schools in Uasin Gishu County, hence the rejection of the null hypothesis. This finding was supported by Forrester (2019); Durnali (2013) and Ngoma (2009) who also found a significant effect of student information management on management of schools.

The regression coefficients table 4.10 below showed the contribution of the independent variable to the dependent variable.

Table 4.10: Regression Coefficients[a]

Model	Unstandardized Coefficients		Standardized Coefficients			Model	
	B	Std. Error	Beta	T	Sig.	Tolerance	VIF
1 (Constant)	1.733	.111		15.576	.000		
Student Info	.577	.028	.792	20.914	.000	1.000	1.000

a. Dependent Variable: Management of secondary schools

Finally, from the data in Table 4.10 above, the study established regression equation was $Y = 1.733 + .577X_1$.

Therefore, management of public secondary schools in Uasin Gishu county = 1.733 + .577 Student Information Management.

The above regression equation revealed that holding EMIS for student information management to a constant zero, effectiveness of management of public secondary schools in Uasin Gishu County would be at 1.733 units. A unit increase in EMIS for student information management would lead to an increase in effectiveness of management of public secondary schools by a factor of $B=0.577$, $P<0.05$.

Thus, courtesy of the Unified Theory of Acceptance and Use of Technology, effective use of EMIS for student information management significantly influences effective management of public secondary schools. This is further underscored by the pragmatic verification of the alternative hypothesis. In this regard it can be concluded that student information management provides the relevant intelligence that enables the right decisions to be made at the right time for effective management of public secondary schools. Therefore EMIS for student information management has major long-term effects. It makes managing student information procedures for school, educational

administrators, policy makers and teachers simple. EMIS for student information management procedures function quickly and efficiently reducing the need for bureaucratic processes. For instance keeping track of the student class attendance, academic performance, extra-curricular activities, awards, health records and student discipline management are now easier. The effectiveness of EMIS for student information management on management of public secondary schools is also premised on the effective communication of student development records and instructional strategies between the management and other teachers precipitating student's progress. These altogether culminates to effective management of public secondary schools due to effective generation of student data to facilitate development of alternative solutions for sophisticated management problems. Madiha (2013) underscores that MIS led to better accessibility to information and therefore has a positive impact on management of schools.

4.5 Influence of EMIS for Human Resource Management on Management of Public Secondary Schools in Uasin Gishu County

The study sought to understand the nature and level of EMIS for human resource management from the administrators' perspective. This aimed at gaining an understanding of the current state of EMIS for human resource management and how it influenced management of public secondary schools in Uasin Gishu county. The results are presented in table 4.11 below.

Table 4.11 Descriptive Statistics for EMIS for Human Resource Management

Statement	SD	D	N	A	SA	M	SD
	%	%	%	%	%		
There is effective management of school staff attendance	12.2	7.6	15.6	31.7	32.8	3.65	1.332
Facilitates monitoring of staff activities using log books which are easily retrieved	0.8	9.2	17.2	36.3	36.6	3.99	.988
Ease of preparation of staff duty schedule	3.1	8.4	18.3	42.0	28.2	3.84	1.027
Teacher attendance registers are accurately recorded	0.0	9.2	11.5	44.7	34.7	4.05	.910
The staff in the school have sound knowledge of EMIS	13.0	5.7	8.8	42.7	29.8	3.71	1.305
Creation of awareness on disciplinary procedures of teaching staff	0.0	6.5	18.3	33.6	41.6	4.10	.923
The school administration recognizes the importance of providing staff appraisal	0.0	5.7	18.7	43.9	31.7	4.02	.858
Staff appraisals are easily monitored	11.1	4.6	13.4	38.2	32.8	3.77	1.263
The school is well resourced with competent staff	14.9	5.0	9.9	23.7	46.6	3.82	1.442
Staff information needs inform decision on recruitment	0.0	1.9	10.3	48.5	39.3	4.25	.715
Student discipline is well followed	0.0	6.9	16.0	39.3	37.8	4.08	.900
There is effective dissemination of school policies/programs	16.4	6.5	7.3	34.0	35.9	3.66	1.436
There is timely circulation of minutes and memos	9.9	5.0	16.0	31.3	37.8	3.82	1.266
EMIS has enhanced communication between school administration and staff	0.0	4.6	9.9	50.4	35.1	4.16	.781
There is ease of identification of training needs amongst the staff	0.8	5.7	13.4	42.4	37.8	4.11	.895
Human Resource Management						**4.11**	**.577**

Key: SD= strongly disagree; **D**= disagree; **N**= Neutral; **A**= agree; **SA**= strongly agree **M**=Mean **SD**= Standard deviation **Source :**(Research Study, 2022)

According to the findings in table 4.11 above, 64.5% of the respondents agreed and strongly agreed that there is effective management of school staff attendance while 19.8% disagreed and 15.6 % were neutral (M=3.65, SD=1.332). In addition, there is facilitation of monitoring of staff activities using log books which are easily retrieved as

per 72.9% of respondents who are in agreement (M=3.99, SD=.988). Besides, EMIS makes preparation of staff duty schedule easy (M=3.84, SD=1.027). In addition, 79.4% of the respondents agreed that teacher attendance registers were accurately recorded (M=4.05, SD=.910). In addition, 29.8% and 42.7% agreed and strongly agreed that staff in the schools had sound knowledge of EMIS while 18.7% disagreed and 8.8% were neutral (M=3.71, SD=1.305). It was also revealed that 75% of the respondents agreed and strongly agreed that there was creation of awareness on disciplinary procedures of teaching staff (M=4.10, SD=.923). Also 31.7% strongly agreed, 43.9% agreed that the school administration recognized the importance of providing staff appraisal while 5.7% disagreed and 18.7% were neutral (M=4.02, SD=.858). The respondents were in agreement that staff appraisals were easily monitored (M=3.77, SD=1.263). The performance appraisals enhanced the achievement of schools' missions and objectives. Thus, the schools are under obligation to set joint targets with their staff so as to regularly appraise them for performance gaps. According to 70.3% of the respondents the school is well resourced with competent staff (M=3.82, SD=1.442). Besides, the respondents were in agreement at 87.8% that staff information needs inform decision on recruitment (M=4.25, SD=.715). There is also effective dissemination of school policies/programs according to 69.9% of respondents who were in agreement (M=3.66, SD=1.436). From the findings 69.1% agreed and strongly agreed that there is timely circulation of minutes and memos (M=3.82, SD=1.266). These implies that through EMIS for human resource management, the management is able to integrate their staff into school operations by meeting their adequate and timely information needs. The county and subcounty directors' opinions were sought on the extent to which public secondary schools adhered to the ministry's standards in their management of non-teaching staff. One of the respondents noted that:

> *"The schools administration are guided by the employment act to enhance their employee relations. Their human resource management system is premised on the ministry of educations guidelines in terms of student to non-teaching staff ratios and qualification which has a bearing on the school capitation* " (ED, 4)

From the findings 37.8% strongly agreed, 39.3% agreed and 6.9% disagreed that student discipline was well followed while 16.0% were neutral (M=4.08, SD=.900). In addition, 85.5% agreed that EMIS had enhanced communication between school administration and staff (M=4.16, SD=.781). Majority of respondents strongly agreed and agreed at 37.8% and 42.4% respectively that there was ease of identification of training needs amongst the staff while 0.8% strongly disagreed, 5.7% disagreed and 13.4% were neutral (M=4.11, SD=.895). Overall, the respondents were in agreement with the effectiveness of human resource management by use of EMIS (M=4.11, SD=.577). Therefore, EMIS for Human resources management improves the effectiveness of public secondary school's staff.

4.5.1 Hypothesis testing

The study hypothesized that:

H_{02}: There is no statistically significant influence of EMIS for human resource management on management of public secondary schools in Uasin Gishu County

The findings in terms of model summary, ANOVA to test for significance and regression coefficients to give the contribution of EMIS for human resource management towards management of public secondary schools was presented below.

Table 4.12: Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	.800[a]	.639	.638	.241	1.637

a. Predictors: (Constant), EMIS human resource management system
b. Dependent Variable: Management of Public Secondary Schools

From table 4.12 above, the R-value showed a simple correlation value of the independent variable to the dependent variable, which was 0.800. This indicates that the independent variable and the dependent variable have a clear positive correlation. According to the R squared value, EMIS for Human resource management (independent variable) clarified .639 or 63.9 percent of the variation in the dependent variable (Management of public secondary schools) in the model. The value of adjusted R squared was 0.638 an indication that there was variation of 63.8 percent on management of public secondary schools due to changes in EMIS for human resource management at 95 percent confidence level. This shows that 63.8 percent changes in effectiveness of management of public secondary schools in Uasin Gishu County could be attributed to the use of EMIS for human resource management. The statistical significance of this value was reported in the ANOVA table 4.13 below:-

Table 4.13: ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	26.836	1	26.836	461.064	.000[b]
	Residual	15.133	260	.058		
	Total	41.969	261			

a. Dependent Variable: Management of public secondary schools
b. Predictors: (Constant), EMIS for Human resource management

Results in table 4.13 above revealed that the significance of F statistics (461.064) is 0.000 which is less than 0.05. This implies that there was a significant influence of EMIS for human resource management on management of public secondary schools in Uasin Gishu County. Thus, the rejection of the null hypothesis. These findings were supported by Ngotho (2018), Rafiei and Davari (2015) and Tadesse, (2011) who also found a significant influence of human resource management on management of public secondary schools.

The regression coefficients table 4.14 showed the contribution of the independent variable to the dependent variable.

Table 4.14: Regression Coefficients[a]

Model	Unstandardized Coefficients		Standardized Coefficients			Model	
	B	Std. Error	Beta	T	Sig.	Tolerance	VIF
1 (Constant)	1.755	.107		16.342	.000		
Human Resource	.555	.026	.800	21.472	.000	1.000	1.000

a. Dependent Variable: Management of secondary schools

Finally, from the data in Table 4.14 above, the study established that the regression equation was $Y = 1.755 + .555X_1$.

Therefore, management of public secondary schools in Uasin Gishu county = 1.755 + .555 EMIS for human resource management.

From the above regression equation it was revealed that holding EMIS for human resource management to a constant zero,effectiveness of management of public secondary schools in Uasin Gishu County would be be at 1.755 units. A unit increase in effectiveness of EMIS for human resource management would lead to an increase in

effectiveness of management of public secondary schools by a factor of 0.555 (B=0.555, P<0.05).

EMIS for Human resource management depends on policies, operations and systems that have influence on staff behavior attitude and performance (Rafiei & Davari, 2015). From the findings, there is a significant influence of EMIS for human resource management on management of public secondary schools. Therefore, without adequate skilled and well-motivated work force operating within a sound human resource management system , effective management of public secondary schools is not possible. This is justified by the fact that getting work done through the coordinated efforts of others is what management entails. In this regard through EMIS for human resource management the school management is likely to get positive outcomes from the teaching and non-teaching staff.

This is underscored by Kunwar (2021) who notes that human resource management systems enhance the productivity of human resource which is akin to efficiency and its attendant consequences. From the descriptive, the respondents were in agreement that school administration recognizes the importance of providing staff appraisal and staff information needs to inform decision on recruitment. EMIS has enhanced communication between school administration and staff and ease of identification of training needs amongst the staff. All these assert the significance of EMIS for human resource management on enhancing the effectiveness of management of public secondary schools. This is premised on the positive attitude of the school administration towards adoption of information communication technology in management of the human resource as enshrined in the Unified Theory of Acceptance and Use of Technology by Davis (2016).

4.6 Influence of EMIS for Curriculum and Instruction Management on Management of Public Secondary Schools in Uasin Gishu County

The study established the nature and level of EMIS for curriculum and instruction management from the administrators' perspectives. This aimed at gaining an understanding of the current state of EMIS for curriculum and instruction management and how it affects management of public secondary schools in Uasin Gishu county. The results are presented in table 4.15 below

Table 4.15 Descriptive Statistics for EMIS for Curriculum and Instruction Management

Statement	SD	D	N	A	SA	M	SD
	%	%	%	%	%		
Digital platform provides data for teaching and learning materials	0.8	6.5	11.1	42.7	38.9	4.13	.903
There is effective workload allocation with respect to subject combination	0.0	2.7	11.8	52.3	33.2	4.16	.730
School timetable is well prepared using digital platforms	0.0	6.5	10.3	50.3	33.2	4.10	.829
Teachers have enough time to cover syllabus	0.0	0.4	9.5	44.3	45.8	4.35	.667
Preparation of schemes of work is easily done	0.0	0.8	10.7	51.1	37.4	4.25	.671
There is effective training on school co-curricular activities	0.0	0.8	2.7	55.3	41.2	4.37	.578
The learners are motivated to participate in co-curricular activities	0.0	3.1	9.2	46.2	41.6	4.26	.750
There is ease of compilation of student reports	9.9	17.2	5.7	39.7	27.5	3.58	1.319
There are proper records of students' test results	0.8	7.3	16.0	41.6	34.4	4.02	.930
Retrieval of evaluated learning materials is easy	16.0	6.9	6.9	35.5	34.7	3.66	1.423
Moderation and storage of learning materials is easy	16.0	7.3	11.5	30.9	34.4	3.60	1.429
Curriculum and Instruction Management						**4.04**	**.470**

Key: SD= strongly disagree; **D**= disagree; **N**= Neutral; **A**= agree; **SA**= strongly agree **M**=Mean **SD**= Standard deviation **Source :**(Research Study, 2022)

According to the findings 81.6% of the respondents were in agreement that digital platforms provided data for teaching and learning materials while 7.3% were in disagreement and 11.1% were neutral (M=4.13, SD=.903). Besides one of the respondents to the interview noted that;

> *"There has been provision of learning materials by the government coupled with availability of digital platforms for curriculum implementation. However, there are still challenges in terms of adequacy of print learning materials and low accessibility of digital platforms"* (ED, 2)

There is effective workload allocation with respect to subject combination according to 85.5% of respondents who agreed and strongly agreed while 2.7% disagreed (M=4.16, SD=.730). From the findings, 33.2% and 50% agreed and strongly agreed that school timetable is well prepared using digital platforms while 6.5% disagreed and 10.3% were undecided (M=4.10, SD=.829). Besides, majority of respondents at 90.1% agreed that teachers have enough time to cover syllabus while 0.4% were in disagreement and 9.5% were neutral (M=4.35, SD=.667). According to the findings 88.5% of the respondents were of the view that preparation of schemes of work was easily done (M=4.25, SD=.671), 0.8% were in disagreement while 10.7% were neutral. One of the respondents who was interviewed noted that;

> *"Preparation and curriculum implementation has been more efficiently done owing to EMIS"* (ED, 4)

According to 96.5% of the respondents there was effective training school co-curricular activities (M=4.37, SD=.578), 0.8% were in a disagreement while 2.7% were neutral. In addition the respondents agreed and strongly agreed at 87.8% that the learners were motivated to participate in co-curricular activities, 3.1% disagreed while 9.2% were neutral (M=4.26, SD=.750). There is also ease of compilation of student reports as revealed by 67.2% who were in agreement while 27.1% disagreed and 5.7% neutral

(M=3.58, SD=1.319). The findings further revealed that 76% of respondents concurred that there are proper records of student test results (M=4.02, SD=.930) while 8.1% were in disagreement and 16.0% were neutral. Majority of the respondents at 70.2% were in agreement with the statement that retrieval of evaluated learning materials was easy while 22.9% were in disagreement and 6.9% being neutral. Out of (70.2%), 35.5% agreed, 34.7% strongly agreed while 6.9% were neutral and 22.9% disagreed (M=3.66, SD=1.423) that retrieval of evaluated learning materials was easy. Based on the mean of 3.60 and standard deviation of 1.429 respondents were in agreement that moderation and storage of learning materials was easy. The study suggested that respondents were also in agreement with the effectiveness of curriculum and instruction management in secondary schools with an overal Mean= 4.04, SD=.470. The study sought the opinion of the directors on changes in curriculum implementation in public secondary schools in the county owing to introduction of EMIS. One of the interviewees noted that;

> *"With all the strengths of curriculum and instructional management as an element of EMIS, it is still embraced as a matter of course thus there is need for more motivation amongst the curriculum implementers for more satisfactory outcomes* " (ED, 5)

4.6.1 Hypothesis testing

The study hypothesized that:

H_{03}: There is no statistically significant influence of EMIS for curriculum and instruction management on management of public secondary schools in Uasin Gishu County

The explanatory behavior of EMIS for curriculum and instruction management on management of public secondary schools was analyzed using regression analysis model

summary, F statistics and regression coefficients of management of public secondary schools as presented below.

Table 4.16 Regression model summary of EMIS for Curriculum and Instruction Management

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	.699[a]	.489	.487	.287	1.735

a. Predictors: (Constant), EMIS for Curriculum and Instruction Management
b. Dependent Variable: Management of Public Secondary Schools

The model summary presented in table 4.16 above involves EMIS for curriculum and instruction management (X_1) as the only independent variable. The coefficient of determination (R square) was .489. This indicated that the model explained a variation or change in the dependent variable of 48.9%. This means that when deliberate effort is put to have EMIS for curriculum and instruction management in place, it drives effective management of public secondary schools. The remaining proportion of 51.1 % can be explained by other factors other than EMIS for curriculum and instruction management. Adjustment of the R square did not change the results substantially, having reduced the explanatory behavior of the predictor from 48.9% to 48.7%. This means that the model is fit to be used to generalize the findings. The statistical significance of this value was reported in the ANOVA table 4.17 below where the results were;

Table 4.17: ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	20.528	1	20.528	248.916	.000[b]
	Residual	21.442	260	.082		
	Total	41.969	261			

a. Dependent Variable: Management of Public Secondary Schools

b. Predictors: (Constant), Curriculum and Instruction Management

Results in table 4.17 above revealed a significance of F statistics (248.916) is 0.000 which is less than 0.05. This implies that there is a significant influence of EMIS for curriculum and instruction management on management of public secondary schools. This tested the null hypothesis and indicated that there is a statistically significant influence of curriculum and instruction management on management of public secondary schools in Uasin Gishu County. Thus, the rejection of the null hypothesis. These findings were supported by Agayo et al. (2018); Mudzanani and Makgato (2016) and Too et al. (2012) who also found significant influence of curricullum and instruction management on effectivenes of management of secondary schools. This implies that by strengthenning EMIS for curricullum and instruction management the supervisory role of the school administration on curricullum implementation is strengthenned thus the realization of management effectiveness.

The regression coefficients table 4.18 below showed the contribution of the independent variable to the dependent variable.

Table 4.18: Regression Coefficients[a]

Model	Unstandardized Coefficients		Standardized Coefficients			Model	
	B	Std. Error	Beta	T	Sig.	Tolerance	VIF
1 (Constant)	1.628	.154		10.584	.000		
Curriculum and instruction	.596	.038	.699	15.777	.000	1.000	1.000

a. Dependent Variable: Management of Public Secondary Schools

Finally, from the data in Table 4.18, the study established regression equation was $Y = 1.628 + .596X_1$.

Therefore, management of public secondary schools in Uasin Gishu county = 1.628 + .596 EMIS for curriculum and instruction management.

From the above regression equation it was revealed that holding EMIS for curriculum and instruction management to a constant zero, effectiveness of management of secondary schools in Uasin Gishu County would be at 1.628 units. A unit increase in effectivenes of curriculum and instruction management by use of EMIS would lead to an increase in effectiveness of management of public secondary schools by a factor of 0.596 ($B=0.596$, $P<0.05$).

The core business of every secondary school administrator is curricullum and instructional management whose outcome is effective management of the school. This has been underpinned by the pragmatic rejection of the null hypothesis and utilization of Unified Theory of Acceptance and Use of Technology by Davis (2016) which eulogizes the use of technology in curricullum and instructional management. The overal mean of the status of curricullum and instruction management was (Mean= 4.04,

SD=.470) an indication that public secondary schools administrators in Uasin Gishu County effectively managed curriculum and instruction through EMIS. However, there is room for further improvement for enhancing the management effectiveness of the schools.

Thus secondary schools are under obligation to strengthen and improve on their usage of EMIS for curricullum and instruction management. The respondents agreed that digital platforms provided data for teaching and learning materials, easy preparation of school timetables, effective training on co-curricular activities and teachers having enough time to cover syllabus an index of effective curriculum management.

4.7 Influence of EMIS for Financial Management on Management of Public Secondary Schools in Uasin Gishu County

The nature and level of usage of EMIS for financial management from the administrators' perspectives was established. This aimed at gaining an understanding of the current state of EMIS for financial management and how it influenced management of public secondary schools in Uasin Gishu County. The results are presented in table 4.19 below;

Table 4.19 Descriptive Statistics for EMIS for financial management

Statement	SD	D	N	A	SA	M	SD
	%	%	%	%	%		
There is easy preparation of Inventory books	0.0	3.1	9.9	47.3	39.7	4.24	.751
It enhances proper records of Cash books	10.7	7.3	14.5	33.6	34.0	3.73	1.292
School budgets are well presented through EMIS	0.0	3.1	9.9	47.3	39.7	4.24	.751
It's easy to manage stores ledgers through EMIS	10.3	16.0	7.3	33.6	32.8	3.65	1.355
Financial guides/transactions are easily downloaded from EMIS	4.6	12.6	6.9	36.3	39.7	3.94	1.176
Stock taking work is made easier electronically	9.5	21.0	5.7	28.6	35.1	3.59	1.394
Balance sheets are updated without difficulty	0.8	6.5	11.1	42.7	38.9	4.13	.903
There is easy monitoring of school fees payments	0.0	6.5	18.3	33.6	41.6	4.10	.923
Financial management						**4.23**	**.537**

Key: SD= strongly disagree; **D**= disagree; **N**= Neutral; **A**= agree; **SA**= strongly agree **M**=Mean **SD**= Standard deviation **Source :**(Research Study, 2022)

From the findings there is easy preparation of inventory books through EMIS (M=4.24, SD=.751) where amongst the respondents 33.6% agreed, 32.8% strongly agreed while 7.3% were neutral ,16.0% disagreed and 10.3% strongly disagreed. When the respondents were asked whether financial management system enhanced proper records of cash books, 33.6% agreed, 34.0% strongly agreed, 14.5% were neutral, 7.3% disagreed and 10.7 % strongly disagreed (M=3.73, SD=1.292). Based on the mean, the respondents were also in agreement that financial guides/transactions are easily

downloaded from EMIS (M=3.59, SD=1.394). Majority of the respondents at 75.2% were in agreement that balance sheets are updated without difficulty (M=4.10, SD=.923). The study also revealed that the respondents were in agreement that there is easy monitoring school fees payment (M=4.02, M=.930). One of the respondents during the interviews noted that:

> *"There has been effective management of resources in terms of budget making. However, for majority of schools, the strict implementation of the budget is a challenge. Besides available reports in most public secondary schools do not show all the existing categories of income and expenditure"* (ED, 3)

Majority of the respondents at 66.4% were in agreement with the statement that there is easy preparation of inventory books while 26.3% disagreed while 7.3% were neutral (M=3.65, SD=1.355). According to the findings 75.0% agreed and strongly agreed that it is easy to manage stores ledgers through EMIS while 17.2% disagreed and strongly disagreed with 6.9% remaining neutral (M=3.94, SD=1.176). The respondents were also in agreement that stock taking was made easier electronically (M=4.13, SD=.903) out of which 42.7% agreed, 38.9% strongly agreed, 11.1% were neutral and 6.5% disagreed while 0.8% strongly disagreed. The overall of EMIS for financial management had a Mean =4.23 and SD =.537. One of the respondents noted during the interviews that;

> *"There is effective management of inventories though not all the school property is captured because of the limitations of the financial management system used by the schools"* (ED, 4)

4.7.1 Hypothesis testing

The study hypothesized that:

H_{04}: There is no statistically significant influence of EMIS for financial management on management of public secondary schools in Uasin Gishu County

The explanatory behavior of EMIS for financial management on management of public secondary schools was analyzed using regression analysis and ANOVA as presented below.

Table 4.20 Regression model summary of EMIS for financial management on management of public secondary schools.

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	.723[a]	.523	.521	.278	2.036

a. Predictor: (Constant), EMIS for Financial Management
b. Dependent Variable: Management of Public Secondary Schools

The model summary presented in table 4.20 above involves EMIS for financial management (X_1) as the only independent variable. The outcome was: the coefficient of determination R square of .523 which indicated that the model explained a variation or change in the dependent variable of 52.3%. This means that when deliberate effort is put to have EMIS for financial management in place, it enhances effectiveness of management of public secondary schools. The remaining proportion of 47.7 % can be explained by other factors other than the role of EMIS for financial management on management of public secondary schools. Adjustment of the R square did not change the results substantially, having reduced the explanatory behavior of the predictor from 52.3% to 52.1%. This means that the model is fit to be used to generalize the findings.

The statistical significance of this value was reported in the ANOVA table 4.21 below where the analysis results revealed as follows;

Table 4.21: ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	21.933	1	21.933	284.627	.000[b]
	Residual	20.036	260	.077		
	Total	41.969	261			

a. Dependent Variable: Management of Public Secondary Schools
b. Predictors: (Constant), EMIS for Financial Management

Results revealed that the significance of F statistics 284.627 is 0.000 which is less than 0.05. This implies that there is a significant influence of EMIS for financial management and effective management of public secondary schools as seen in table 4.21 above. This tested the null hypothesis and indicated that there is a statistically significant influence of EMIS for financial management on management of public secondary schools in Uasin Gishu County thus, the rejection of the null hypothesis. These findings were supported by Kabaillah (2018) and Phyliters et al. (2018) which found a significant influence of financial management on effectiveness of school management.

The regression coefficients table 4.22 showed the contribution of the independent variable to the dependent variable.

Table 4.22: Regression Coefficients[a]

Model	Unstandardized Coefficients		Standardized Coefficients			Model	
	B	Std. Error	Beta	T	Sig.	Tolerance	VIF
1 (Constant)	1.753	.137		12.836	.000		
Financial	.540	.032	.723	16.871	.000	1.000	1.000

a. Dependent Variable: Management of secondary schools

Finally, from the data in Table 4.22, the study established regression equation was Y = 1753 + .540X_1.

Therefore, management of public secondary schools in Uasin Gishu county = 1.753 + .596 EMIS for financial management.

From the above regression equation it was revealed that holding EMIS for financial management to a constant zero, effectiveness of management of public secondary schools in Uasin Gishu County would be be at 1.753 units. A unit increase in EMIS for financial management would lead to and increase in effectiveness of management of public secondary schools by a factor of 0.540 (B=0.540, P<0.05).

Basing on these findings and pragmatic paradigm usage of EMIS for financial management remains key in enhancing effectivenes of management of secondary schools. This is because it allows the schools to make better financial planning and control. Besides all the activities of management and its performance is indexed by its effective financial planning and control. Bush (2020) explains that school's financial management is imperative because it enables the school to achieve its mission. This responsibility connects to the school management capacity to handle financial issues as budget planning, controlling, organizing, leading and equalizing the educational

program and funds. From the descriptive results the respondents agreed that through EMIS school budgets are well presented, there is easy preparation of inventory books and it is easy to manage stores ledgers among others. Therefore, borrowing from Unified Theory of Acceptance and Use of Technology by Davis (2016) the use of technology in financial management affects effectiveness of management of public secondary schools. This explains that the existence and survival of any school depends on the management's ability to manage the school funds effectively.

4.8 Influence of EMIS for School Safety and Security Management on Management of Public Secondary Schools in Uasin Gishu County

The study established the nature and level of school safety and security management from the administrators' perspectives as presented in table 4.23 below;

Table 4.23 Descriptive Statistics for EMIS for School Safety and Security Management

Statement	SD	D	N	A	SA	M	SD
	%	%	%	%	%		
Protection of property through security checks is enhanced	13.4	6.5	10.7	34.0	35.5	3.72	1.360
EMIS enhances greater protection of human resources	14.1	6.9	8.8	40.5	29.8	3.65	1.347
CCTV cameras ensure proper monitoring of school compound safety and security	0.0	4.2	16.0	42.0	37.8	4.13	.831
Computer passwords enhance Data/information security	2.3	2.7	17.2	45.4	32.4	4.03	.901
There is high information security in public secondary schools	4.2	13.4	5.7	40.1	36.6	3.92	1.155
There is adequate communication of security information between the school and stakeholders	8.8	9.9	11.8	39.7	29.8	3.72	1.237
Students and staff understand and follow security guidelines	3.1	9.2	15.3	40.8	31.7	3.89	1.050
Resources are adequately allocated to security measures	0.0	7.3	19.5	47.7	25.6	3.92	.858
There are strategies for early identification of students with special needs to enhance their safety	0.0	3.4	15.6	56.9	24.0	4.02	.732
Students and staff are trained on hazard identification and reporting	0.0	6.9	14.5	48.5	30.2	4.02	.851
There is a strong safety culture in the school	0.8	6.1	10.7	45.0	37.4	4.12	.884
School safety and security						**3.92**	**.512**

Key: SD= strongly disagree; **D**= disagree; **N**= Neutral; **A**= agree; **SA**= strongly agree **M**=Mean **SD**= Standard deviation **Source :**(Research Study, 2022).

Majority of the respondents at 69.5% are in agreement that protection of property through security checks is enhanced, 19.9% are in disagreement while 10.7% were

neutral (M=3.72, SD=1.360). The respondents were also in agreement with the statement that EMIS enhanced greater protection of human resources with 29.8% strongly agreeing , 40.5 % agreeing , 6.9% disagreeing and 14.1% strongly disagreeing while 8.8 % were neutral (M=3.65, SD=1.347). In addition, the respondents were in agreement that CCTV cameras ensured proper monitoring of school compound safety and security with 79.8 % in agreement, 4.2% disagreement while 16.0% were neutral (M=4.13, SD=.831). According to the findings 77.8% of the respondents agreed and strongly agreed that computer passwords enhance data/information security (M=4.03, SD=.901), 5.0% were in disagreement while 17.2% were undecided. In addition, 76.7% of the respondents were in agreement that there was a high information security in public secondary schools (M=3.92, SD=1.155), 17.6% were in disagreement while 5.7% were undecided. The respondents were also in agreement at 69.5% that there is adequate communication of security information between the school and stakeholders (M=3.72, SD=1.237) while 11.8% were undecided and 18.7% in disagreement.

In addition, 72.5% of the respondents agreed that students and staff understood and followed the security guidelines (M=3.89, SD=1.050), while 12.3% were in disagreement where as 15.3% were undecided. According to the findings 73.3% of the respondents were in agreement that resources were adequately allocated to security measures in the schools (M=3.92, SD=.858), 7.3% disagreed while 19.5% were neutral.

Besides, 80.9% of the respondents were in agreement that there were strategies for early identification of children with special needs to enhance their safety (M=4.02, SD=.732), while 3.4% were in disagreement and 15.6% were neutral. The respondents also agreed at 78.7% that students and staff were trained on hazard identification and reporting

(M=4.02, SD=.851), 6.9% were in disagreement while 14.5% being neutral. In addition, 37.4% of the respondents strongly agreed and 45.0% agreed that there was a strong safety culture in the schools (M=4.12, SD=.884), 0.8% strongly disagreed, 6.1% disagreed while 10.7% were neutral. In general EMIS for safety and security management in public secondary schools in Uasin Gishu county had (M=3.92, SD=.512). This implies that EMIS for security and safety management is adequately utilized, however there is need for improvement in its full implementation with regard to addressing emerging safety and security challenges for maximum protection of public secondary schools.

In this connection one of the respondents noted during the interview that:

> *"Because of low funding and oversight, MOE safety standards and guidelines had not been fully implemented in most schools"* (ED, 6)

4.8.1 Hypothesis testing

The study hypothesized that:

H_{05}: There is no statistically significant influence of EMIS for safety and security management on management of public secondary schools in Uasin Gishu County

The findings in terms of regression analysis and ANOVA to establish the influence of EMIS for safety and security management on management of public secondary schools are presented below.

Table 4.24: Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	.653[a]	.426	.424	.304	1.782

a. Predictors: (Constant), EMIS for Safety and Security Management
b. Dependent Variable: Management of Public Secondary Schools

From table 4.24, the R-value showed a simple correlation value of the independent variable to the dependent variable, which was 0.653 indicating a clear positive correlation. As per the R squared value that was stated, EMIS for safety and security management (independent variable) clarified .426 or 42.6 percent of the variation in the dependent (management of public secondary schools) variable in the model. The value of adjusted R squared was 0.424 an indication that there was variation of 42.4 percent on effectiveness of management of public secondary schools due to changes in EMIS for safety and security management at 95 percent confidence level. This shows that 42.4 percent changes on effectiveness of management of public secondary schools in Uasin Gishu County could be accounted to EMIS for safety and security management. The statistical significance of this value was reported in the ANOVA table 4.25 below where the analysis results revealed.

Table 4.25: ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	17.886	1	17.886	193.102	.000[b]
	Residual	24.083	260	.093		
	Total	41.969	261			

a. Dependent Variable: Management of Public Schools
b. Predictors: (Constant), EMIS for Safety and Security

Results revealed that the significance of F statistics 193.102 is 0.000 which is less than 0.05. This implies that there is a significant influence of EMIS for safety and security management on management of public secondary schools as seen in table 4.25 above. This tested the null hypothesis and indicated that there is a statistically significant influence of safety and security management on effectiveness of management of public secondary schools in Uasin Gishu County. Thus, the rejection of the null hypothesis. These findings were supported by Duszka (2015) and Lukumon et al. (2020) who also found the effect of safety and security management on effective management outcomes in public secondary schools.

The regression coefficients table 4.26 below showed the contribution of the independent variable to the dependent variable.

Table 4.26: Regression Coefficients[a]

	Unstandardized Coefficients		Standardized Coefficients			Model	
Model	B	Std. Error	Beta	T	Sig.	Tolerance	VIF
1 (Constant)	2.035	.145		13.989	.000		
Safety and security	.511	.037	.653	13.896	.000	1.000	1.000

a. Dependent Variable: Management of Public Secondary Schools

Finally, from the data in Table 4.26 above, the study established the regression equation as $Y = 2.035 + .511X_1$.

Therefore, management of public secondary schools in Uasin Gishu county = 2.035 + .511 EMIS for safety and security management.

From the above regression equation it was revealed that holding safety and security management systems to a constant zero,effectiveness of management of public

secondary schools in Uasin Gishu County would be at 2.035 units. A unit increase in EMIS for safety and security management would lead to an increase in effectiveness of management of public secondary schools by a factor of 0.511 (B=0.511, P<0.05). In this way, EMIS for management of safety and security offers a chance to impact on the success of students, teaching and non teaching staff. Students, teachers, staff and community are able to interact in a supportive manner to assist teaching and learning in safe and secure schools. Continuous, prevention and effective preparation for future disasters to reduce loss of life, damage to property and interruption of daily operations of schools remain key. The descriptive results on matters computer passwords enhances data/information security. Besides, there is a high information security, communication of reliable and valuable information between the school and stakeholders. In addition, students and staff understand and follow the security guidelines. Resources allocated to security measures paints an observation of effective security and safety management in secondary public schools though with reservations because the respondents were not in strong agreement with a mean of 3.92 and SD of .512. Therefore, the school management should ensure effective implementation of all security and safety measures as per the ministry of education guidelines for effective management of public secondary school.

4.9 Influence of Education Management Information System (EMIS) on Management of Public Secondary Schools in Uasin Gishu County

Multiple regression analysis of the influence of the elements of EMIS on management of public secondary schools was presented as follows;

Table 4.27: Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	.872[a]	.760	.755	.198	1.926

a. Predictors: (Constant), EMIS for Student information, human resource, curriculum and instruction, financial management and safety and health management
b. Dependent Variable: Management of Public Secondary Schools

From the findings in table 4.27 above the value of adjusted R squared is 0.755 an indication that there was a variation of 75.5% on the effectiveness of management of public secondary schools in Uasin Gishu County due to elements of Education Management Information Systems such as student information management, human resource management, curriculum and instruction management, financial management and safety and security management at 95% confidence level.

This indicates that improvements in elements of EMIS such as student information management, human resource management, curriculum and instruction management, financial management and safety and security management account for 75.5% percent of changes in effectiveness of management of public secondary schools. Although other variables not included in this analysis account for 24.5 percent of effectiveness of management of public secondary schools. The correlation coefficient, abbreviated as R, represents the relationship between the variables in the sample. According to the results in the table above, there was a clear positive association between elements of Education Management Information Systems and effective management of public secondary schools, as shown by the 0.872 coefficient.

Table 4.28: ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	31.896	5	6.379	162.124	.000[b]
	Residual	10.073	256	.039		
	Total	41.969	261			

a. Dependent Variable: Management of public secondary schools

b.Predictors: (Constant), EMIS for Student information, human resource, curriculum and instruction, financial management and safety and security management

The ANOVA table 4.28, showed that the significance of F statistics 162.124 is 0.000, which is less than 0.05, according to the study findings. This tested the null hypothesis that there is no statistically significant influence of Education Management Information Systems on effectiveness of management of public secondary schools in Uasin Gishu County. Hence, we reject the null hypothesis and accept the alternative hypothesis which states that there is a statistically significant influence of Education Management Information Systems on effectiveness of management of public secondary schools in Uasin Gishu County. It can therefore be inferred that there is a significant influence of Education Management Information System on effectiveness of management of public secondary schools. This finding was supported by Wemba (2020) and Shah (2014) who also found that Education Management Information Systems significantly influence effectiveness of management of public secondary schools.

Based on the regression coefficients it was revealed that holding student information, human resource, curriculum and instruction, financial management and safety and security management to a constant zero management of public secondary schools in Uasin Gishu County would be at .917 as shown in table 4.29 below.

Table 4.29 Regression Coefficients[a] of Effectiveness of Management of Public Secondary by EMIS

	Unstandardized Coefficients		Standardize Coefficients			Collinearity Statistics	
Model	**B**	**Std. Error**	**Beta**	**t**	**Sig.**	**Tolerance**	**VIF**
(Constant)	.917	.117		7.857	.000		
Student Inf	.146	.051	.200	2.832	.005	.188	5.311
Human Res	.234	.051	.336	4.555	.000	.172	5.816
Curric and Instruct	.225	.039	.265	5.778	.000	.447	2.235
Finance	.086	.038	.115	2.264	.024	.366	2.733
Security	.078	.034	.099	2.290	.023	.497	2.012

a. Dependent Variable: Education Management in Public Secondary Schools

A unit increase in EMIS for student information management would result in a factor of 0.146 (B=0.146, P=0.05) increase in effectiveness in management of public secondary schools. A unit increase in EMIS for human resource management would result in a factor of 0.234 (B=0.234, P<0.05) increase in effectiveness in management of public secondary schools.

In adition, a unit increase in EMIS for curriculum and instruction would result in a factor of 0.225 (B=0.225, P<0.05) increase in effective management of public secondary schools, and a unit increase in financial management would result in a factor of 0.086 increase in effective management of public secondary schools and a unit increase in safety and security management would result in a factor of 0.078 in effective management of public secondary schools. Therefore there is a significant influence of the independent variable (Education Management Information Systems on dependent

variable which is effectiveness in management of public secondary schools since all the P values a less than 0.05.

Therefore the model adopted was:

$Y = .917 + 0.146X_1 + 0.234\ X_2 + 0.225\ X_3 + 0.086\ X_4 + 0.078\ X_5$

Where Y= Effectiveness of management of public secondary schools

X_1= EMIS for student information management

X_2 = EMIS for human resource management,

X_3= EMIS for curriculum and instruction

X_4 = EMIS for financial management

X_5= EMIS for safety and security management

These findings are further supported by Odhiambo (2017) who noted that EMIS influences positively the management of secondary schools as it reduces the time to do routine tasks thus freeing up time for other school engagements by management.

CHAPTER FIVE

SUMMARY OF FINDINGS, CONCLUSIONS AND RECOMMENDATIONS

5.1 Introduction

This chapter presents the summary of findings, conclusions, recommendations and areas for further research in relation to the findings of the study. The aforementioned items have been presented in relation to the influence of effectiveness of Education Management Information System on Education Management in public secondary schools in Uasin Gishu County. From the conclusions, the effectiveness of all the elements of Education Management Information System under study were found to enhance Education Management in public secondary schools. Besides, the recommendations of the study have been highlighted.

5.2 Summary

The main objective of this study was to find out the effectiveness of Education Management Information System on Management of public secondary schools in Uasin Gishu County. The study investigated the Education Management Information System elements such as student information management, human resource management, curriculum and instruction management, financial management and safety and security management system in public secondary schools in Uasin Gishu County. From the study findings it was established that effectiveness of Education Management Information System significantly influenced Management of public secondary schools in Uasin Gishu County.

5.2.1 Effectiveness of EMIS for Student Information Management on Management of Public Secondary Schools

In view of statistical results, effectiveness of (EMIS for) student information management was found to have a positive and significant influence on management of public secondary schools in Uasin Gishu County. From the findings the R square of .627 implied that student information management explained 62.7 percent variation on management of public secondary schools with $F= 437.414$, $p<0.05$. This led to the rejection of the null hypothesis. Thus, an improvement in effectiveness of student information management influences management of public secondary schools. The implication of this result is that management of public secondary schools may be enhanced by embracing EMIS for student information management. Courtesy of the Unified Theory of Acceptance and Use of Technology, effective use of EMIS for student information management significantly influenced management of secondary schools.

5.2.2 Effectiveness of EMIS for Human Resource Management on Management of Public Secondary Schools

Based on the findings effectiveness of EMIS for human resource management was found to have a positive and significant influence on management of public secondary schools in Uasin Gishu County. The R square of .639 of EMIS for human resource management explained 63.9 percent variation on management of public secondary schools with $F= 461.064$, $p<0.05$. This led to the rejection of the null hypothesis. Thus, EMIS for human resource management enhances management of public secondary schools. The implication of this result is that EMIS for human resource management enhances effectiveness of management of public secondary schools as supported by Unified Theory of Acceptance and Use of Technology.

5.2.3 Effectiveness of EMIS for Curriculum and Instruction Management on Management of Public Secondary Schools

EMIS for Curriculum and instruction management was found to have a positive and significant influence on effectiveness of management of public secondary schools in Uasin Gishu County. From the findings the R square of .489 curriculum and instruction management explained 48.9% variation on effectiveness of management of public secondary schools with F= 248.916, $p<0.05$. This led to the rejection of the null hypothesis. Though there is room for further improvement for enhancing effectiveness in the management of public secondary schools. Thus, public secondary schools are under obligation to strengthen and improve on their curricullum and instruction management through EMIS. The respondents agreed that digital platform provided data for teaching and learning materials, preparation of school timetables, training of co-curricular activities and providing adequate time for syllabus coverage as an index of effective curriculum management. The implication of this result is that EMIS for curriculum and instruction enhanced effective management of public secondary schools as supported by Unified Theory of Acceptance and Use of Technology.

5.2.4 Effectiveness of EMIS for Financial Management on Management of Public Secondary Schools

EMIS for financial management was found to have a positive and significant influence on management of public secondary schools in Uasin Gishu County. From the findings the R square of .523 EMIS for financial management explained 52.3% variation on management of public secondary schools with F= 284.62, $p<0.05$. This led to the rejection of the null hypothesis. Though there is room for further improvement for enhancing effectiveness in management of public secondary schools. Thus public secondary schools need to strengthen and improve on their EMIS for financial

management for effective management. The implication of this result is that effective management of public secondary schools is promoted by EMIS for financial management as supported by Unified Theory of Acceptance and Use of Technology.

5.2.5 Effectiveness of EMIS for Security and Safety Management on Management of Public Secondary Schools

EMIS for Security and safety management was found to have a positive and significant influence on effectiveness of management of public secondary schools in Uasin Gishu County. According to the R square of .426, EMIS for security and safety management explained 42.6% variation on management of public secondary schools with $F= 193.102$, $p<0.05$. This led to the rejection of the null hypothesis. The respondents were not in strong agreement with the statements on security and safety management based on the overall mean of 3.92 and SD of .512. This calls for the need for further improvement on EMIS for safety and security for enhanced management of public secondary schools.

5.2.6 Effectiveness of Education Management Information System on Management of Public Secondary Schools

According to the study findings 75.5% variation of effectiveness of management of public secondary schools in Uasin Gishu County is attributed to the elements of Education Management Information System under study. These elements include student information management, human resource management, curriculum and instruction management, financial management and safety and security management with F statistics 162.124 is 0.000. This implies that there is a significant association between effectiveness of Education Management Information Systems and management of public secondary schools.

5.3 Conclusions

From the findings, this study makes a number of conclusions. The study explored the influence of effectiveness of elements of Education Management Information System such as student information management, human resource management, curriculum and instruction management, financial management and safety and security management on management of public secondary schools in Uasin Gishu County. The study concludes that Education Management Information System is key to enhancing effectiveness of management of public secondary schools. Based on Unified Theory of Acceptance and Use of Technology, EMIS remains fundamental in enhancing effectiveness of management of public secondary schools.

With the EMIS putting an emphasis on the constant improvement of data collection, storage, retrieval and processing in education management. It's only beneficial to strengthen the elements of EMIS in order to maximize on its output in the realms of public schools' management. Thus, the effectiveness of EMIS remains crucial and all its elements should be strengthened. This is evidenced by the fact that these elements understudy jointly and independently enhances to some magnitude effectiveness of management of public secondary schools as per the study findings.

From the findings it can be concluded that EMIS for human resource management is the greatest contributor to management of public secondary schools followed by curriculum and instruction management, student information management, finance management and safety and security management. This asserts that the effectiveness of all the elements of EMIS under study have different strength of relationship with management of public secondary schools. However, this does not devalue the role of the other elements of EMIS under study due to the higher strength of EMIS for human resource

management. This implies that the public secondary schools' management should enhance the elements of EMIS collectively to secure maximal effectiveness of their management.

Courtesy of the pragmatic verification of the alternative hypothesis, EMIS for student information management significantly influences effective management of public secondary schools. In this regard, EMIS for student information management is important in coordinating and scheduling communications for parents, administration and teachers geared towards students' progress that is crucial in enhancing effective management of public schools**.** Student information management provides the relevant intelligence that enables the right decisions to be made at the right time for effective school management.

The study concludes that EMIS for human resource management significantly influences effectiveness of management of public secondary schools. Therefore, without adequate skilled and well-motivated work force operating within a sound human resource management system effectiveness of management of public secondary schools is not possible. This is justified by the fact that getting work done through the coordinated efforts of others is what effective management entails. In this regard through effective human resource management system the school management is likely to get positive outcome from the subordinate and teaching staff. This is premised on the positive attitude of the school administration towards adoption of information communication technology in management of the human resource as enshrined in the Unified Theory of Acceptance and Use of Technology by Davis (2016).

Curriculum and instruction management was found to have a positive and significant influence on management of public secondary schools in Uasin Gishu County.

However, there is room for further improvement of curriculum and instruction management for enhancing effective management of public secondary schools through EMIS. Thus, public secondary schools are under obligation to strengthen the use of EMIS for curricullum and instruction management to enhance effectiveness of management of public secondary schools. For instance, there is need for enhancing ease of compilation of student reports, proper records of test results, moderation, storage and retrieval of evaluated learning materials among others.

Based on these findings and pragmatic paradigm financial management remains key in enhancing effectiveness of management of public secondary schools. This is because it allows the schools to make better planning for funds. This responsibility connects to the school management capacity to handle financial issues as budget planning, controlling, organizing, leading and equalizing the educational program and money. From the descriptive results the respondents agreed that school budgets are well presented through EMIS. There is also easy preparation of inventory books and management of stores ledgers among others. This implies that, the existence and survival of any school depends on the management's ability to manage the school funds which is an index of effective management of a school.

A unit increase in safety and security management leads to increase in effectiveness of management of public secondary schools. The use of EMIS for management of safety and security offers a chance to impact the success of students, teachers and non-teaching staff. Students, teachers, non-teaching staff and community are able to interact in a supportive manner to assist teaching and learning in safe and secure schools. Therefore, the school management should enhance the use of EMIS for security and safety management for monitoring all security and safety measures as per the ministry of education guidelines.

5.4 Recommendations

5.4.1 EMIS for Student Information Management

EMIS for Student Information Management collects data at the student level that enables the school to gather and analyze more precise data to guide policy and programming decisions. Thus, continuous improvements on Student Information Management remains essential for sustenance of effective public secondary schools management. In this regard, the study recommends that pubic secondary schools must continuously improve on their implementation of EMIS for student information management.

5.4.2 EMIS for Human Resource Management

EMIS for human resource management should focus on employment of non-teaching staff based on the employment act and within the confines of ministry of education guidelines in terms of student non-teaching staff ratios and qualification which has a bearing on the school capitation. There should be effective communication of school policies to the staff and awareness creation of EMIS. The secondary schools should organize for non-teaching staff training to enhance the competence of the staff for effective service delivery. Besides the schools should strengthen their performance management for effective school management outcomes.

5.4.3 EMIS for Curriculum and Instruction Management

Curriculum and instruction management is the core business of a learning institution and its effectiveness enhances the management of any learning institution. Therefore, for maximal results of management of secondary schools the study recommends that the government should enhance adequacy of print learning materials and accessibility of digital platforms to schools. This is justified by the essence of digital platforms in

providing data for teaching and learning materials as indicated by the findings of the study. Teachers should improvise learning materials where they are not available. The school management should enhance the capacity of their staff in utilization of EMIS platforms for curriculum and instruction management.

5.4.4 EMIS for Finance Management

Financial management allows schools to make better planning for funds. This responsibility connects to the school management capacity to handle financial issues as budget planning, controlling, organizing, leading and equalizing the educational program and money. The survival of any school depends on its management's ability to efficiently utilize the funds which is an index of effective management of the school. The study recommends that schools should strictly implement their budgets to avoid misappropriation of finances. In addition, EMIS for finance management should have a provision for all income and expenses. Management of inventories by the system is easy, though there is need for the ministry of education to come up with a policy that will have all school property captured in the system. In addition there is need for enhanced ease of use of EMIS for finance by the school for effective management.

5.4.5 EMIS for Security and Safety Management

Resources allocated to security and safety measures paints an observation of effective security and safety management in secondary schools though with reservations because the respondents were not in strong agreement of effective security management. Therefore, the school management should ensure effective implementation of all security and safety measures as per the ministry of education guidelines for effective management. The school principals should ensure that all students and staff are trained on safety and security measures in order to prevent risks by working collaboratively with the public and private institutions and developing emergency plans. Based on the

foregoing all the elements of EMIS should be improved on and implementation strengthened through a policy framework. This is evidenced by the fact that these elements understudy jointly and independently affect to a large extent effectiveness of management of secondary schools as per the study findings.

5.5 Areas for Further Research

Arising from some of the implications and limitations of the study, recommendations for further research are made. While this study successfully examined the conceptual framework, it also presented a rich prospects for other areas to be researched in future. Future research may re-examine the conceptual model used in this research with a larger sample size from both private and public secondary schools so that the outcome can be generalized to a larger population. Besides, future studies may focus on the role of moderating variables on the relationship between EMIS and effective management of secondary schools.

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APPENDICES

APPENDIX I: INFORMED CONSENT LETTER

I am a Ph.D. student at Moi University in the department of Educational Management and Policy Studies. My research title is **Effectiveness of Education Management Information System on Management of Public Secondary Schools in Uasin Gishu County, Kenya**. This is in partial fulfillment of the requirements for the award of the Doctor of philosophy degree. Your identification was based on the fact that you are currently in the administrative position in your school, subcounty and county level. I kindly request your assistance in this academic endeavour by providing the relevant information asper the objectives of the study in the research instrument. I assure you that the information provided here will be held in confidence and your participation remains voluntary. Your responses in answering all the questions will be highly appreciated.

Thank you in advance for your cooperation.

Mr Moses Wamutoro

APPENDIX II: QUESTIONNAIRE

Instruction

The purpose of this study is to investigate the influence of ***Education management information system on management of public secondary schools in Uasin Gishu County, Kenya***. I kindly request you to tick against your appropriate choice from the options in the questions below.

Section I: Demographic Information

1. What is your gender?

Male { } Female { }

2. What is your age bracket in years?

Below 30 { } 30 – 35 { } 36-40 { }

41 -45 { } 46 -50 { } 51 -55 { }

Above 55 { }

3. What is your highest academic qualification?

AT/Diploma{ } B.Ed. { } PGDE { }

Masters { } Ph. D { }

4. Please indicate the number of years you have served as an administrator

1-5 { } 6-10 { }

11-15 { } 16-20 { }

Above 20yrs { }

5. Indicate the number of students currently enrolled in your school

Below 500 { } 501-1000 { }

1001-1500 { } above 1501 { }

6. Indicate the level of your school

National { } Extra County { }

County { } Sub-County { }

SECTION II: EDUCATION MANAGEMENT INFORMATION SYSTEM

This section has parts **II a, II b, II c and II d**. Please indicate the extent to which you agree or disagree with each statement by ticking where appropriate using the following 5-Point Likert scale: In **Parts II a, II b, II c and II d**.

5 = Strongly Agree (SA), 4 = Agree(A), 3 = Neutral (N), 2 = Disagree(DA), 1 = Strongly Disagree(SD)

Part IIa. Student Information Managemnt

Please, indicate to what extent you agree with the following statements on student information management in your school.

Items	**Student information management**	**SA**	**A**	**N**	**DA**	**SD**
1	Students' attendance has improved					
2	Students' health records can be track easily					
3	Easy tracking of discipline management support					
4	The system helps in monitoring fee payment of the students					
5	The students' performance has been effectively monitored					
6	There is easy retrieval of students' performance records					
7	Records of students' extra-curricular activities, including awards and achievements are accessible					
8	The student performance has improved					
9	Administrators are notified about irregularities in student attendance					
10	Students' information system helps in providing referral for deviance case					
11	Records of past and currently written examinations are accessible					
12	Student information system is functional thus statistics on student easily made available					

Part II B: Human Resource Management

Please, indicate to what extent you agree with the following statements on human resource management in your school.

	Human Resource Management	**SA**	**A**	**N**	**D**	**SD**
1	Effective management of school staff attendance					
2	Facilitate monitoring of staff school activities Log books are easily retrieved					
3	Ease of preparation of staff duty schedule					
4	Teacher attendance registers are accurately recorded					
5	The staff in the school have sound of EMIS					
6	Creation of awareness on disciplinary procedures of teaching staff					
7	The School Administration recognizes the importance of providing staff appraisal					
8	Staff appraisals are easily monitored					
9	The school is well resourced with competent staff					
10	Staff discipline is well followed					
11	Staff information needs inform decision on recruitment					
12	There is effective dissemination of school policies/programs					
13	There is timely circulation of minutes and memos					
14	EMIS has enhance communication between school administration and staff					
15	Ease of identification of training needs amongst the staff					

Part IIc: Curriculum and Instruction Management

Please, indicate to what extent you agree with the following statements on curriculum and instruction in your school.

Items	Curriculum and Instruction management	SA	A	N	DA	SD
1	Digital platform provide teaching and learning materials					
2	There is effective workload allocation with respect to subject combination					
3	School timetable is well prepared School timetable is well prepared using digital platforms					
4	Teachers have enough time to cover syllabus					
5	Preparation of schemes of work is easily done					
6	There is effective Training school co-curricular activities					
7	The learners are motivated to participate in co-curricular activities					
8	Ease of compilation of student reports					
9	There is proper records of achievement test results					
10	Retrieval of learning materials is easy					
11	Moderation and storage of learning materials is easy					

Part IId: Finance Management

Please, indicate to what extent you agree with the following statements on finance management in your school.

	Finance Management	**SA**	**A**	**N**	**D**	**SD**
1	There is easy preparation of Inventory books					
2	It enhances proper records of Cash books					
3	School budgets are well presented through EMIS					
4	It's easy to manage stores ledgers through EMIS					
5	Financial guides/transactions are easily downloaded from IMIS					
6	Stock taking work is made easier electronically					
7	Balance sheets are updated without difficulty					
8	There is easy monitoring school fees payments					

Part IIe: Safety and Security Management

Please, indicate to what extent you agree with the following statements on safety and security management in your school

	Safety and Security Management	**SA**	**A**	**N**	**D**	**SD**
1	Protection of property through security checks is enhanced					
2	EMIS enhances greater protection of human resources					
3	CCTV cameras ensure proper monitoring of school compound safety and security					
4	Computer passwords enhance Data/information security					
5	There is high information security in school					
6	There is adequate communication of security information between the school and stakeholders					
7	Students and staff understand and follow security guidelines					
8	Resources are adequately allocated to security measures					
9	There are strategies for early identification of students with special needs to enhance their safety					
10	Students and staff are trained on hazard identification and reporting					
11	There is a strong safety culture in the school					

SECTION III: MANAGEMENT OF PUBLIC SECONDARY SCHOOLS

Indicate to what extent you agree with the following statements on management of public Secondary Schools.

	Management of Public Secondary Schools	**SA**	**A**	**N**	**DA**	**SD**
1	Students' academic mean score have improved					
2	The school co-curriculum has improved					
3	The students have demonstrated desire competence in various subjects					
4	There is improve relationship between students and school management					
5	Effective communication between school management and ministry of education					
6	Cordial relation between parents and parents					
7	Effective communication between TSC and School managers					
8	Teachers are satisfied with work environment					
9	There is teachers' commitment in their work					
10	There is a good relation between school and the surrounding community.					
11	Students' attendance has improved					
12	Students' health records can be track easily					
13	Easy track student Utilization of support service on discipline management support					
14	The system helps in monitory fee payment of the students					
15	The students' performance has been effectively monitored					
16	There is easy retrieval of students performance					
17	The student performance have improved					

END

THANK YOU FOR YOUR TIME

APPENDIX III: INTERVIEW SCHEDULE FOR COUNTY AND SUB-COUNTY DIRECTORS OF EDUCATION

1. How has student information management affected the administrative performance of the public schools?

   ……

   ……

   ……

2. What is your observation on discipline cases amongst students in public secondary schools in your area jurisdiction in the last five years?

   ……

   ……

   ……..

3. State your opinion on the changes in curriculum implementation in public secondary schools in your area of jurisdiction as a result of EMIS

   ……

   ……

   ……

4. Explain the extent to which the public secondary schools in your area of jurisdiction adhere to ministry of education standards in the management of teaching and non-teaching staff using EMIS

   ……

   ……

   ……

5. What is your opinion on school management of financial records using EMIS?

   ……

   ……

   ……

6. Give your assessment on the safety and security of public secondary schools using EMIS

   ……

   ……

APPENDIX IV: KREJCIE AND MORGAN TABLE

N	*S*	*N*	*S*	*N*	*S*
10	10	220	140	1200	291
15	14	230	144	1300	297
20	19	240	148	1400	302
25	24	250	152	1500	306
30	28	260	155	1600	310
35	32	270	159	1700	313
40	36	280	162	1800	317
45	40	290	165	1900	320
50	44	300	169	2000	322
55	48	320	175	2200	327
60	52	340	181	2400	331
65	56	360	186	2600	335
70	59	380	191	2800	338
75	63	400	196	3000	341
80	66	420	201	3500	346
85	70	440	205	4000	351
90	73	460	210	4500	354
95	76	480	214	5000	357
100	80	500	217	6000	361
110	86	550	226	7000	364
120	92	600	234	8000	367
130	97	650	242	9000	368
140	103	700	248	10000	370
150	108	750	254	15000	375
160	113	800	260	20000	377
170	118	850	265	30000	379
180	123	900	269	40000	380
190	127	950	274	50000	381
200	132	1000	278	75000	382
210	136	1100	285	1000000	384

Note.—*N* is population size. *S* is sample size.

Source: Krejcie & Morgan, 1970

APPENDIX V: A MAP OF UASIN GISHU COUNTY

APPENDIX V: RESEARCH PERMIT

MOI UNIVERSITY
Office of the Dean School of Education
Tel: (053) 43001-8
(053) 43555
Fax: (053) 43555
P.O. Box 3900
Eldoret, Kenya

REF: EDU/D.PHIL.A/1013/16 **DATE:** 21st January, 2021

The Executive Secretary
National Council for Science and Technology
P.O. Box 30623-00100
NAIROBI

Dear Sir/Madam,

RE: RESEARCH PERMIT IN RESPECT OF MOSES WAMUTORO – (EDU/DPHIL.A/1013/16)

The above named is a 2nd year Postgraduate Higher Degree (PhD) student at Moi University, School of Education, Department of Curriculum, Instruction and Educational Media.

It is a requirement of his PhD Studies that he conducts research and produces a dissertation. His research is entitled:

"Influence of Education Management Information System on Effectiveness and Efficiency of Secondary Schools in Uasin Uasin Gishu County, Kenya."

Any assistance given to enable him conduct research successfully will be highly appreciated.

Yours faithfully,

21.01.2021

PROF. J. K. CHANG'ACH
DEAN, SCHOOL OF EDUCATION

APPENDIX VI: RESEARCH LICENSE

REPUBLIC OF KENYA

NATIONAL COMMISSION FOR
SCIENCE,TECHNOLOGY & INNOVATION

Ref No: 401500

Date of Issue: 10/February/2021

RESEARCH LICENSE

This is to Certify that Mr., MOSES WAMUTORO WAMUTORO of Moi University, has been licensed to conduct research in Uasin-Gishu on the topic: INFLUENCE OF EDUCATION MANAGEMENT INFORMATION SYSTEMS ON EFFECTIVENESS AND EFFICIENCY OF SECONDARY SCHOOLS IN UASIN UASIN GISHU COUNTY, KENYA for the period ending : 10/February/2022.

License No: NACOSTI/P/21/8929

401500

Applicant Identification Number

Director General
NATIONAL COMMISSION FOR
SCIENCE,TECHNOLOGY &
INNOVATION

Verification QR Code

NOTE: This is a computer generated License. To verify the authenticity of this document, Scan the QR Code using QR scanner application.

APPENDIX VII: RESEARCH AUTHORIZATION

REPUBLIC OF KENYA
MINISTRY OF EDUCATION
State Department for Early Learning and Basic Education

Telegrams: "**EDUCATION**", Eldoret
Telephone: **053-2063342** or **2031421/2**
Mobile : **0719 12 72 12/0732 260 280**
Email: cdeuasingishucounty@yahoo.com
: cdeuasingishucounty@gmail.com
When replying please quote:

County Director of Education,
Uasin Gishu County,
P.O. Box 9843-30100,
ELDORET.

Ref: No. MOE/UGC/ACT/9/VOLL. III/179

21st APRIL , 2021

Mr. Moses Wamutoro
Moi University
P.O Box 3900.
ELDORET

RE: RESEARCH AUTHORIZATION.

In reference to your Licence Ref no. **NACOSTI/P/21/8929** dated 10TH February, 2021 from National Commission for Science, Technology and Innovation (NACOSTI), and your request letter dated 21st April, 2021, you are hereby granted the authority to carry out research on ***"Influence of Education Management Information Systems on Effectiveness and Efficiency of Secondary Schools in Kenya, Period Ending 10th February, 2022,"*** Within Uasin Gishu County.

We take this opportunity to wish you well during this data collection.

FOR: COUNTY DIRECTOR OF EDUCATION
UASIN GISHU COUNTY
APR 2021
P.O. Box 9843 - 30100 ELDORET

PSINEN C. MICHAEL
For: County Director of Education
UASIN GISHU.