

**SECONDARY SCHOOL PRINCIPALS' LEVEL OF PREPAREDNESS
TOWARDS ADOPTION OF NATIONAL EDUCATION MANAGEMENT
INFORMATION SYSTEM IN KEIYO NORTH SUB-COUNTY,
KENYA**

**BY
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DECLARATION

Declaration by Candidate

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DEDICATION

This work is dedicated to my late father, my mother, wife, children and friends for being a great source of inspiration.

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ABSTRACT

Management Information System (MIS) is necessary for correct, timely and effective decision making. Despite the importance of MIS, most nations, including Kenya, lack a functional National Education Management Information System. The study's overarching goal was to examine secondary school Principals' readiness to adopt NEMIS in Keiyo North Sub-County, Elgeiyo-Marakwet County, Kenya. The study's specific objectives were to determine the effect of the Principal's level of acceptance on the adoption of NEMIS in secondary schools; evaluate the impact of ICT skills acquisition on the adoption of NEMIS in secondary schools; and determine the effect of availability of ICT infrastructure on the adoption of NEMIS in secondary schools. The concurrent triangulation research design was utilized. The methodology is a mixed method study based on the Unified Theory of Acceptance and Use of Technology (UTAUT) and the public choice theory. The study's target population included 30 secondary school Principals, 30 teachers in charge of ICT, and one Sub-County Director of Education. A sample population of 30 secondary school Principals, 30 teachers in charge of ICT at Keiyo North Sub-County schools comprising of boarding and day secondary schools, and one Sub-County director of education was utilized. The researcher interviewed the Sub-County Director of Education on purpose. Secondary schools were divided into four categories: national, extra-county, county, and sub-county. Both quantitative and qualitative data were gathered using close-ended questionnaires and an interview schedule. Validity and reliability of the research instruments were pre-tested in a pilot study. Quantitative data was analyzed using descriptive and inferential statistics, while qualitative data was analyzed using content analysis. Regression analysis was used to create a model. According to the findings, the sub-variable of Principal's degree of preparation (acceptance, ICT skills acquisition, and ICT infrastructure) had a statistically significant beneficial influence on NEMIS adoption in secondary schools. The findings of this study will be valuable in planning for the Ministry of Education (MoE). The dimensions of Principal's degree of preparation (acceptance, ICT skills acquisition, and ICT infrastructure) are positively and strongly connected with NEMIS adoption, and as these constructs improve, NEMIS adoption improves. According to the study, technology usage is a function of user acceptability, which is consistent with the postulates of UTAUT theory, which led this study. It is consequently advised that educational administrators pay more attention to the postulates of UTAUT theory in order to effectively implement ICT-driven initiatives such as NEMIS. According to the study, for any government program to work, persons in charge should spend resources for the public good rather than following their own self-interest, as the public choice theory suggests.

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ABBREVIATIONS AND ACRONYMS

CS	Cabinet Secretary
EMIS	Education Management Information System
ESD	Education for Sustainable Development
GOK	Government of Kenya
ICT	Information Communication Technology
IT	Information Technology
KEPSHA	Kenya Primary School Heads Association
KNEC	Kenya National Examination Council
KSSSA	Kenya Secondary School Sports Association
MIS	Management Information System
MOE	Ministry of Education
NEMIS	National Education Management Information System
NHIF	National Hospital Insurance Fund
PS	Principal Secretary
SDG	Sustainable Development Goals
UNESCO	United Nations Educational, Scientific and Cultural Organization
UPI	Unique Personal Identification
UTAUT	Unified Theory of Acceptance and Use of Technology

CHAPTER ONE

1.0 Introduction

The research background, the problem statement, the study's objective, hypotheses, the study's significance, justification as well as scope are all examined in this chapter. It also takes into account the study's assumptions, theoretical and conceptual framework, and operational definitions of key terminology.

1.1 Background of the Study

In recent times, the concept of economic development has achieved greater importance that no country can increase the welfare of its people without economic development and thus the need to sustain such development. Sustainable development is that development that meets the needs of the present without compromising the ability of future generations to meet their own needs (Emas, 2015). This can be achieved through proper planning in education. An education system should create equity and be more efficient in resource utilization. The education system should prepare a learner who is self-sustaining, focused on economic development and personal growth.

The Sustainable Development Objectives (SDGs) are a collection of aspirational goals sponsored by the United Nations for altering the world, and these objectives include; eradicating global poverty everywhere. Despite the fight to end poverty globally, Kenya still faces high levels of poverty, and this creates the need for our education system to look for ways of ending such poverty. The education system in Kenya should take a comprehensive approach to deal with poverty since the youths and learners are likely to face political crises during the election periods leading to economic vulnerability. Again natural disasters, inter-ethnic violence and loss of

biodiversity might be attributed to extreme poverty. However, the government should have an intrinsic education system that teaches the youth ways to overcome extreme poverty and how to escape falling back into it in future (GoK, 2007).

Food security is another aspect of sustainable development goals which might be addressed in schools. Practical teachings may encourage strategies to end hunger by attaining food security and increased nutrition, as well as promoting sustainable agriculture, healthy lives, and well-being for people of all ages. Kenya is an agriculturally productive nation, and if the youths put the lessons learned in school into action, they can propel the country to food sustainability (GoK, 2007).

The goals also aim at achieving gender equity and empowering all women, ensuring the availability and sustainable management of water and sanitation, ensuring universal access to cheap, dependable, sustainable, and clean energy, and supporting inclusive, sustainable economic growth, full and productive employment, and better work for all. For ages, there has been gender inequity in society and gender-based violence, which impacts negatively to the country's economic capabilities. However, inclusive education would address gender issues (GoK, 2007).

Furthermore, there is a drive towards constructing robust infrastructure, promoting equitable and sustainable industrialization, and fostering innovation. Infrastructure is attributed to a country's economic growth as it opens the un-accessible rural areas. It leads to faster and efficient means of transport, which is vital to farmers who supply farm produce to the cities. It leads to effective farming as farmers can get farm inputs ahead of time and sell their products without losses resulting from goods that perish on transit to the market. Again, innovation reduces inequality within and across

nations, makes cities and human settlements more inclusive, secure, resilient, and sustainable, and ensures long-term consumption and production patterns (GoK, 2007). Learners may take immediate action to counteract climate change and its consequences, as well as protect and sustainably use oceans, seas, and coastal habitats for development. Sustainable life leads to reduced environmental pollution as learners would focus on green living, which does little harm to the environment. In addition, the goals aim at protecting and promoting sustainable use of terrestrial ecosystems, sustainably manage forests, combat desertification and halt biodiversity loss.

Further-more, there is a push towards promoting peaceful and inclusive societies for sustainable development. The Kenyan society is prone to inter-ethnic clashes, and the differences that exist in the community might be instilled at a young age. However, the schools might play a key role in bringing cohesion within the society. To increase the means of implementation and revive the 2030 agenda for sustainable development, the educational environment should nurture principles such as justice for all and construct effective, responsible, and inclusive institutions at all levels (GoK, 2007).

Above all, SDGs aim to ensure inclusive and equitable quality education and promote life-long learning opportunities for all (GoK, 2007, UNESCO, 2009). To attain all these goals of sustainable development, education plays a very critical role. It is said to be a catalyst to development because of its multiplier effect on other sectors of the economy like health, agriculture, manufacturing, communication and security. Education development, according to Luena (2012), would result in improved wealth and income distribution, higher quality of opportunity, long life, availability of trained

labor, accelerated economic growth, lower crime rate, reduced population growth, political stability, better results and national unity

Education has been recognized internationally as fundamentally important to address the critical global challenges we all face. Education for Sustainable Development (ESD) is a large and difficult endeavor. The environmental, social, cultural, and economic repercussions are tremendous, affecting many parts of the world's population's lives. The ultimate purpose of ESD is to incorporate sustainable development concepts, attitudes, and practices into all aspects of knowledge and training (UNESCO, 2009).

This education campaign will inspire behavioral changes that will result in a more sustainable future in terms of environmental purity, economic viability, and a just society for current and future generations (UNESCO, 2009). We can attain lifestyles based on economic and social fairness, food security, ecological integrity, sustainable livelihoods, respect for all life forms, and strong values that promote social cohesion, democracy, and collective action via education and lifelong learning.

According to UNESCO (2009), education for sustainability, therefore, is so essential to re-orienting the way we live and work and, to Kenya, becoming a sustainable society. It is through education that, as a country, we can attain a middle-income economy like the Asian tigers. Learners should implement the knowledge they get in schools into their daily lives and transform the society as a whole. Practical knowledge is an ingredient that drives change in the community.

Because of the importance of the role of education in meeting sustainable development goals, most governments all over the world have invested a good proportionate part of their national income in education; Kenya is one such country.

According to (UNSECO 2009), there has been tremendous progress toward the aim of providing basic education to all children globally from the year 2000. The total enrollment rate in emerging regions has reached 91 percent. This is true as it can be observed in Kenya.

Kenya's government has put in place every mechanism feasible to ensure a complete transition from elementary to secondary school. This is mentioned in the Kenya Vision 2030 report under the social pillar, which indicates that under education and training, Kenya would provide her population the quality education that can compete internationally, ensuring standards in training, and research for development and better individual well-being. The main goal is to eliminate illiteracy by increasing access to education, boosting the transfer rate from elementary to secondary schools, and enhancing the quality and standard of education. Other objectives include integrating all special needs into educational and development institutions, establishing an adult literacy rate of 80%, and raising student enrollment to 95% (GOK, 2007).

The country recognizes education as very crucial in poverty reduction. It imparts people with skills that are needed in employment; people who are educated are likely to earn better than those who are less educated. For instance, a medical doctor earns more than a cleaner who has no academic qualification. Such earnings can lead to better living standards since individuals can afford basic human wants. This is likely

to result in more productivity in the economy. Education too helps in the redistribution of income from the rich to the poor. By taxing the rich and redistributing this through the provision of essential services like free primary and secondary education to the poor, the gap between the rich and the poor is reduced.

To do all of these, the government must have access to up-to-date information regarding educational inputs, resources, governance, operations, and outcomes in order to make informed decisions. An appropriate educational system relies heavily on information. A country's education policymaking requires knowledge regarding its education system's inputs, operations, governance, resources, and outcomes (SABER, 2016).

Education, just like all businesses must build or upgrade an information system in order to provide the essential information on its status, activities, and outputs. No organization or system can function efficiently or effectively without information, and no informed or logical decision can be made (SHAH, 2008). Kenya constructed a computerized National Educational Management Information System (NEMIS) in the year 2017 to assist educational planners, policymakers, and administrators at all levels of government in policy creation and education system management.

An information system is a collection of interconnected components that gather (retrieve), analyze, preserve, and disseminate information to assist organizational decision making and control. It can be any organized combination of people, hardware, software, communication networks and data resources that collects, transforms and disseminate information in an organization (SHAH, 2008)

Education data are utilized by a wide range of stakeholders, including local communities, parents, teachers, school heads, the Ministry of Education, education financiers, and regional and international development partners that demand high-quality and timely information to make informed choices. This calls for proper data capture, storage and analysis that is easy to retrieve when needed for use (UNESCO, 2020). Unlike business which does not keep data that is useless, the education sector has data that just runs all over. We need to target such data and organize it in such a way that it informs so that we can make better decisions for resource allocation. Capturing, storing, and analyzing data for use is a difficult task in and of itself. Converting data into information, including database administration, is a research strategy that can only be performed out by skilled and competent personnel (Hassan, 2014); this is an indication that Principals and teachers who handle information need training and better skills on data handling. MIS is required for the collection of data, its processing to information, proper storage of information, retrieval of information, and optimal exploitation of information.

EMIS provides thorough and standardized data in an organized context, allowing information to be used in policy and planning discussions. Its objective is to help countries improve data capture, analysis, storage and use in decision-making for resource allocation. It helps governments to arrange education in a cost-effective and efficient manner. EMIS is a system developed to systematically arrange information relevant to educational development management (Wako, 2003). It is also defined as a system of people, innovation, models, methods, mechanisms, procedures, rules, and regulations that collaborate to provide decision-makers, education leaders and managers in an organization with a comprehensive, dependable, integrated set of

essential and timely data as well as information to assist them in carrying out their responsibilities as outlined by Kornkaew (2012).

EMIS acts as a management tool that enables the management to track and analyze the resource distribution and expenditure. Moreover, the management can fully control the quality of education directly consumed by the students by controlling the faculty, staff and teachers who interact with the students almost every day. It becomes easier to manage all the performance indexes which matter in an education system through EMIS.

Education is an important sector to all governments, and this is the reason why most governments always put it first before other sectors. Most countries, including Kenya, allocate a lot of resources to the sector. This creates the need to adopt the use of EMIS in managing these resources. Planning in education requires firsthand information which can only be necessitated by an Information Management System that is efficient and timely. In Asia for instance, India and Pakistan had adopted the use of EMIS although there were challenges on the quality of data, low level of management support, un-cooperative attitude of EMIS staff among others (Ellison, 2004).

In Afghanistan EMIS had just a few primitive applications and a clunky centralized data collecting mechanism when the program began. Data on schools and pupils was formerly collected on paper, and legends abound of student information sheets being transported to Kabul disguised in vegetable carts. As the education sector expanded, the government recognized the necessity of precise data for decision making, which led to the implementation of EMIS (Silva, 2015). Kenya could be headed in the same direction leading to better education data management. In Colombia, the

application of IT enabled the Colombian government to save substantial money and open 240,000 more school spaces, 120,000 of which were the result of effectiveness and did not necessitate the hiring of additional instructors (Martha, 2012).

In Nigeria it was typical practice in the education industry to lack reliable and timely data. To address this dreadful condition, the country implemented the Nigeria NEMIS (Nganjiozor, 2016). The goals of NEMIS were to strengthen Nigeria's education statistical system by linking and assembling various existing information systems, integrating and synthesizing all education data, quantitative and qualitative, into a single system, reliable, and producing more appropriate and timely data needed at every level of government for policy formation, strategic planning, and data analysis initiatives in education in Nigeria.

Tanzania recognized EMIS as one of the key priority areas which should be strengthened to achieve education for all objectives. This made the Tanzanian government incorporate EMIS implementation strategies in the Education Sector Development Program (Luena, 2012). Despite the use of EMIS in Tanzania, there were shortfalls in the system such as data inconsistency, inaccuracy, poor infrastructure, low capacity of EMIS staff and low institutional and financial support (Luena, 2012). Such challenges are being experienced in Kenya on the use of NEMIS, as was observed by the Kenyan Permanent Secretary (PS), MOE. The PS highlighted various obstacles, including poor and inconsistent internet connections in institutions, a shortage of network connectivity in isolated places, institutional reluctance to change, and insufficient ICT expertise among Principals and deputies (Wanzala, 2019).

EMIS plays a key role in decision making and allocation of educational resources, and this is the reason why the Kenyan government introduced NEMIS in the year 2017 so as to track data about students, teachers and other educational resources. It is through NEMIS that the government was able to quickly determine that Mombasa, Nyeri, Kirinyaga, Muranga, Tharaka Nithi, Nairobi, Turkana, Uasin Gishu, Kajiado, Narok and Vihiga Counties took in more students from other counties. Some of these counties are very far away from the Ministry of Education head office (Oduor, 2020).

Through the National Education Management Information System also, the government established that following the government initiative to assimilate all learners who sat for the KCPE in the year 2019, 997,697 children were accepted to various secondary educational institutions (Oduor, 2020). It could have been difficult to get such information within a short period of time without NEMIS.

It is important to note that the success of NEMIS is dependent on how the management information system at lower levels, particularly the school level, is organized. It is however difficult to use EMIS, without three major components of an Education Management Information System. These components include the following: process (data capture, analysis and storage), people (their skills, competences and attitudes) and technology (ICT infrastructure) (Kornkaew, 2012)

These factors contribute either positively or negatively in the use of EMIS in different regions of the country as was observed by the Kenya's Cabinet Secretary in control of Ministry of Education recently, (Ouma, 2019). In Elgeiyo-Marakwet County Keiyo North Sub-County, challenges in adoption of ICT are experienced. These include internet access and inadequate trained staff. The study sought to ascertain how

effectively the secondary schools' Principals in Keiyo North Sub-County were prepared for efficient utilization of resources using NEMIS in making decisions.

1.2 Statement of the Problem

Ministry of Education in Kenya has made dramatic and significant investments in human and material resources to develop NEMIS. NEMIS is a technology designed to help eliminate bureaucracy and the opacity that has long defined the Ministry of Education. The system should integrate the sector's separate data points by creating a safe haven for all important knowledge components for resource allocation.

According to GOK (2009), Kenya as a nation has not made effective use of EMIS. This was witnessed in the usage of NEMIS, as some parents encountered issues getting form one admission letters in 2019. The purpose of NEMIS was to assure openness and fairness, admissions efficiency in order to evade the issues of cartels trading acceptance letters (Ouma, 2019). This still wasn't the case as Oduor (2020) indicated, since it was revealed that certain Principals in various government secondary schools provided parents with acceptance letters without the necessary authorization via NEMIS even without NEMIS authority (Oduor, 2020). It was a mandatory requirement that Principals post open spaces in their schools on the NEMIS portal to create a level playing field across the board, however this did not happen as planned. NEMIS nevertheless encountered challenges, such as insufficient network coverage and even criticism from Principals and instructors. This was also observed in Nandi Local as Chepcheng, (2019) indicated, where a number of staffs in the county administration requested that the government terminate or halt the process of accepting and enrolling students through NEMIS.

As a consequence, many Principals were unable to retrieve students, instructor, and non-teaching staff bio-data. In addition, most Principals resorted to enrolling students manually which led to delayed admission process. Wrong subject registration, wrong entry of birth certificate numbers and submission of wrong passport photographs for students in KNEC registration which uses similar procedure as NEMIS, had also been noticed. Moreover, parents have also contributed to the delays in filling the bio-data as some students have missing documents. The collaboration between various stakeholders in the education system has not been accountable in fulfilling the registration goals due to the challenges facing NEMIS. This illustrates that there is a huge difficulty with NEMIS, particularly in terms of internet access, which necessitates school administrators and instructors to labor till the wee hours of the morning to input data into the system. As a result, education groups are opposing the adoption of NEMIS.

In the year 2020, KNEC, after introducing the requirement that candidates registering for the examination should have the Unique Personal Identification number (UPI), decided to remove the requirement after discovering that most students did not have the identification number. The unique personal identification number is a number that is generated via NEMIS. During registration of candidates in the year 2020, most schools had reported difficulties in uploading the candidates' data as most lacked the Unique Personal Identification numbers (News Blaze Digital News, 2020). This depicts that there is a big problem in the adoption of NEMIS in terms of quality of data and data capture in secondary schools in the country. From the foregoing, it is clear that NEMIS adoption by the school Principals and teachers is still low. As a result, the purpose of this study was to analyze the level of preparation of secondary

school Principals in Elgeiyo-Marakwet County's Keiyo North Sub-County in implementing NEMIS.

1.3 Purpose and Objectives of the Study

1.3.1 Purpose of the Study

The aim of this study was to assess secondary school Principals' readiness to implement NEMIS in Keiyo North Sub-County, Elgeiyo-Marakwet County, Kenya.

1.3.2 Specific Objectives

The research aimed to achieve the following precise goals:

- i. Determine the impact of Principal acceptance on NEMIS adoption in secondary schools in Keiyo North Sub-County.
- ii. To assess the impact ICT skills acquisition on adoption of NEMIS in secondary schools in Keiyo North Sub-County.
- iii. To determine the effect of availability of ICT infrastructure on the adoption of NEMIS in secondary schools in Keiyo North Sub-County.

1.3.3 Research Questions

- i. What effect does the Principal's degree of acceptability have on NEMIS adoption in secondary schools in Keiyo North Sub-County, Kenya?
- ii. What influence does ICT skills acquisition has on adoption of NEMIS in secondary schools in Keiyo North Sub-County, Kenya?
- iii. What is the impact of availability of ICT infrastructure on NEMIS adoption in secondary schools in Keiyo North Sub-County, Kenya?

1.3.4 Research Hypotheses

- i. Principal's acceptability level has no statistically significant influence on NEMIS adoption in secondary schools in Keiyo North Sub-County, Kenya.
- ii. ICT skills acquisition has no statistically significant influence on NEMIS adoption in secondary schools in Keiyo North Sub-County, Kenya.
- iii. Availability of ICT Infrastructure has no statistically significant influence on NEMIS adoption in secondary schools in Keiyo North Sub-County, Kenya.

1.4 Significance of the Study

The research outcomes may be used by MOE in planning purposes and for resource allocation. It may help the government in assessing the need to capacity-build the existing Principals and train new ones on how to effectively use modern technology in managing educational resources to avoid wastage. The state may also make informed choices about the provision of Information and Communication Technology (ICT) programs in schools in order to facilitate the use of NEMIS in education.

Future scholars may also utilize the findings as a source of information to bridge knowledge gaps when they conduct their research. Principals too may see the need to invest in management information system in their schools.

1.5 Scope of the study

Concurrent triangulation research design and mixed method research approach were used to conduct this research on secondary school Principals' levels of preparation and adoption of NEMIS in Keiyo North Sub-County between July 2019 and March 2020. It was held in thirty Kenyan schools in Keiyo North, Elgeiyo-Marakwet County. The researcher used survey tools that included interview schedule and questionnaires to

collect data. The study's primary goal was to determine the influence of Principals' level of preparedness on NEMIS adoption.

1.6 Limitations of the Study

This study was limited by a number of factors: first, respondents not willing to respond to research questions. The researcher informed them that the intention of the research was purely for academic purposes and that information given was treated with high level of confidentiality. Secondly, the researcher could not access some areas due to bad terrain. The researcher made use of alternative means of transport (for instance boda boda) which enabled the researcher to reach areas that could not be accessed by use of vehicles.

1.7 The Study's Assumptions

The study had the following assumption:

- i. That both Principals and teachers in charges of ICT were trained on the use of NEMIS.
- ii. That all the secondary schools were in the same level of ICT infrastructure.

1.8 Theoretical Framework

The research was influenced by Viswanath Venkatesh's Unified Theory of Acceptance and Use of Technology (UTAUT). The unified theory of acceptance and use of technology (UTAUT) is a technology acceptance model formulated by Venkatesh and others in "User acceptance of information technology: Toward a unified view". The UTAUT aims to explain user intentions to use an information system and subsequent usage behavior. The theory holds that there are four key

constructs: 1) performance expectancy, 2) effort expectancy, 3) social influence, and 4) enabling conditions. (Venkatesh *et al.* 2013).

The first three are direct determinants of usage intention and behavior, and the fourth is a direct determinant of user behavior. Gender, age, experience, and voluntariness of use are posited to moderate the impact of the four key constructs on usage intention and behavior. The theory was developed through a review and consolidation of the constructs of eight models that earlier research had employed to explain information systems usage behaviour (theory of reasoned action, technology acceptance model, motivational model, theory of planned behavior, a combined theory of planned behavior/technology acceptance model, model of personal computer use, diffusion of innovations theory, and social cognitive theory) (Venkatesh *et al.* 2013).

The theory attempts to explain the amount of adoption of information technology usage. It assesses whether the user will be able to accept new technology and if the user will be able to use it. The theory provides a response to one of the most important questions: 'What are the user's attitudes and perceptions toward embracing ICT solutions independent of the degree of accessible infrastructure and support administration?' (Venkatesh *et al.* 2013).

The study is also firmly grounded on James Buchanan's public choice theory, which examines the government's decision-making process for resource administration. The idea takes into account how successfully the government allocates resources. The theory's main tenet is that leaders work first on own self-interest according to Tucker (1995) rather than advancing society's greatest interests. Public choice, building upon economic theory, has some other tenets that are largely adhered to. The first is the use

of the individual as the common decision unit. Due to this there is no decision made by an aggregate whole. Rather, decisions are made by the combined choices of the individuals. The second is the use of markets in the political system, which was argued to be a return to true economics. However, as Buchanan argued, "the ultimate defense of the economic- individualist behavioral assumption must be empirical. The only final test of a model lies in its ability to assist in understanding real phenomena".

Public choice is often used as a shorthand for components of modern public choice theory that focus on the ways in which elected officials, bureaucrats and other government agents can be influenced by their own perceived self-interest when making decisions in their official roles. Public choice analysis has roots in positive analysis ("what is") but is often used for normative purposes ("what ought to be") in order to identify a problem or to suggest improvements to constitutional rules (i.e., constitutional economics).

Instead of acting in their own self-interest, school administrators should provide more funds to instructors training and ICT technology in their respective schools so as to enhance support for NEMIS. To be more efficient in allocating resources in a critical sector such as education, the government must ensure equality in allocation of resources.

1.9 Conceptual Framework

The application of EMIS in data capture, analysis, storage, and usage needs a framework that incorporates three key components: technology (ICT infrastructure), people (including skills and attitudes), and processes (Kornkaew, 2012).

This study looked at the influence of Principals' level of acceptance, skills acquisition, and the availability of ICT infrastructure on NEMIS adoption. The study also investigated the relationship between Principals' acceptance, skills acquisition, ICT infrastructure, and NEMIS implementation. Individuals with the right skills and attitude must use technology to obtain raw data and assess it by converting it to information that can be preserved and utilized to make more informed investment decisions in order for a school management system to work.

Figure 1.1 depicts the researcher's own conceptual framework for this investigation. Adoption of NEMIS is highlighted as a dependent variable in this diagram. The independent factors include: acceptance level, skills acquisition and ICT infrastructure while adoption of NEMIS is the dependent variable.

Adoption of NEMIS will be greater if the level of satisfaction is high, Principals have skills and training, and are skilled in record management, and there is enough training system that facilitates the use of NEMIS. On the other side, NEMIS will be difficult to implement if Principals do not readily embrace it, do not have the necessary training and expertise, and there is insufficient ICT infrastructure in schools. Principals require ICT infrastructure and procedures to carry out their jobs successfully. Methodologies, on the other hand, will fail if there are not enough individuals with the requisite skills, talents, and attitudes. Although technology is extremely important in the implementation of Education Management Information System, it cannot replace people's abilities and knowledge (Kornkaew, 2012). People with the necessary skills and competence are required to make technology usable.

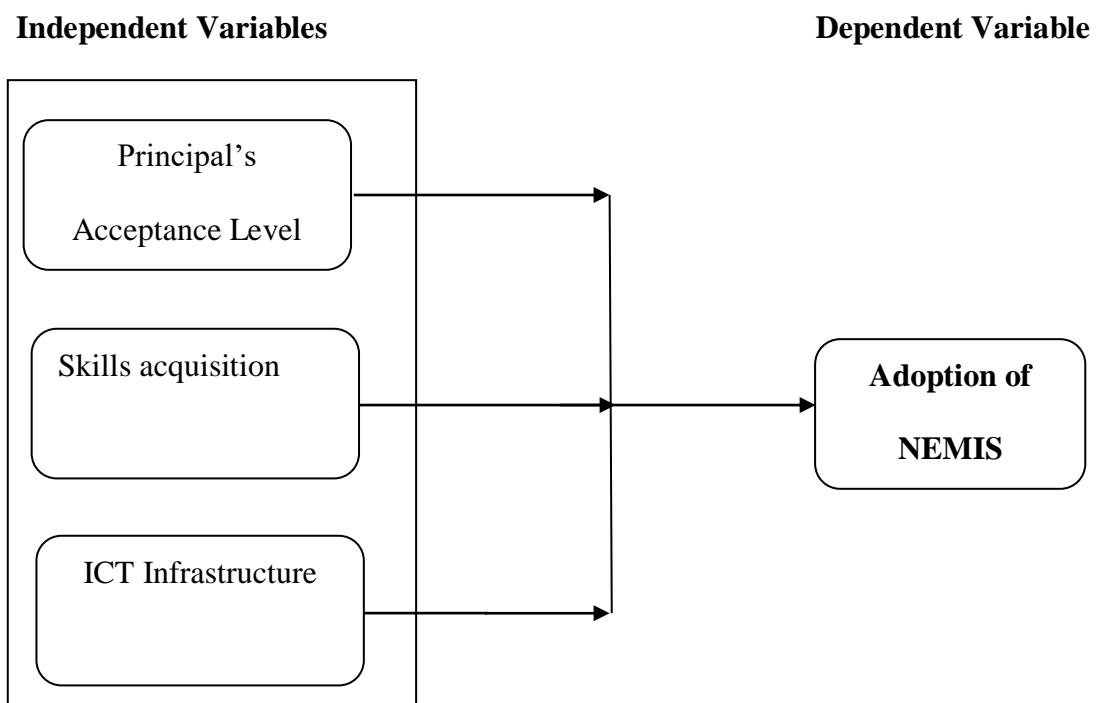


Figure 1.1 Conceptual Framework.

Source: Author's Compilation, 2020

1.10 Operational Definition of Key Terms

Adoption of NEMIS: - The action or fact of choosing to take up, follow or use NEMIS.

Education Management Information System (EMIS): - Is a specially designed system for measuring the effectiveness of the institute's educational programs as well as regulating the distribution and allocation of educational resources.

ICT Infrastructure: - This refers to Computers, the internet, intranet, and flash drives which are examples of technical tools and resources used to communicate, generate, transmit, store, and manage information.

Management Information System (MIS):- In this study, a central data repository is defined as one that is capable of not just acquiring and storing data, but also evaluating it and creating reports from it.

National Educational Management Information System (NEMIS): It is an online-based platform for data handling and management system that gathers data from various institutions for learning, processes them and give reports of the status of predetermined indicators, and provides the education sector with a solid platform for effective administration to ensure that every schools' student is counted (Rotich, 2019). This a

Kenyan Education Management Information System developed in 2017 by the Ministry of Education.

Preparedness: - A state of readiness of Principal in terms of positive attitude and behavior change, possession of adequate ICT skills and sufficiency of ICT infrastructure in embracing of NEMIS by secondary school Principals in Keiyo North Sub-County..

Principal: - A person who is in charge of a secondary school.

Resource allocation: - To assign resources for particular purpose.

Skills: - The ability of Principals and teachers in charge of ICT to do something (Handle new technology) well.

CHAPTER TWO

LITERATURE REVIEW

2.0 Introduction

This chapter is divided into the following sections: Overview of Management Information System, Management Information System Components, Description of EMIS in Kenya, NEMIS adoption, acceptance level, data handling and ICT skills acquisition, ICT infrastructure and use, and finally, an overview of the literature reviewed and gaps.

2.1 Management Information System in Secondary Schools

Management information systems (MIS) according to Yasin, (2015), have become one of the most valued items for every business operating in the twenty-first century. It is a strategy used to monitor and manage waste in numerous sectors of the economy, most notably the financial sector. Its original goal was to organize manual and pre-computer mechanical tasks, but MIS has significantly advanced and increased its duties and capabilities, making it ideal for other fields such as education.

An information system is a structured collection of people, technology, software, communication networks, and data resources that collects, transforms, and distributes information inside a company (Mohamad, 2009). Information is a critical component of every educational institution. Any country's education policymaking requires reliable and timely data regarding educational inputs, resources, governance, operations, and outcomes. EMIS delivers systematic, high-quality data in an organized context, allowing for the use of information generated during planning and policy discussions (SABER, 2016).

The EMIS policies sphere aims at helping nations in identifying methods to improve information gathering, data and system administration, and data utilization in decision making, hence improving many facets of the education system (Abdul-Hamid, 2014). EMIS is responsible for creating and managing educational data inside a school system. The functional structure of EMIS encompasses the technological and institutional mechanisms for acquiring, manipulating, and disseminating information in a school system. It is crucial for tracking developments and assisting policymakers in making decisions based on facts. Long-term viability, transparency, and efficiency determine the system's efficacy. In planning and policy debate, an effective EMIS is credible and operational (Abdul-Hamid, 2014).

In this context, individuals who use EMIS, principally at the basic level, should be competent in data handling and have a positive attitude in the use of IT in information and data management, which usually requires additional training and capacity building of secondary school managers for them all to be productive and useful in the use of NEMIS.

Notwithstanding the critical function that EMIS plays as Marcia, (2011) highlighted, its usage in many countries, particularly in the developing countries like Kenya, remains a subject of concern. Many countries, with Kenya not being left behind, have accepted EMIS though some have already failed as per Wako (2003). Creating a functional EMIS necessitates dependable internet access, skilled human resources, a good attitude toward EMIS, and dedication from those in charge (Trucano, 2006). Most countries, including Kenya, lack these elements. EMIS is a novel concept in Kenyan education, and it is a tool that provides administrative help. The government considers giving funding and other help for the first three to five years while creating

the EMIS. However, this may not be the case because authorities may not consider assisting institutions in implementing the EMIS management system. Because education is so vital, most governments throughout the globe have consistently dedicated enormous funds to it in order to foster commercial development and progress. Kenya emphasizes the importance of education in achieving sustainability and teaching existing young people to deal with current and future sustainability concerns.

The allocation of educational resources is dependent on information supplied by managers and leading staff of educational institutions on the ground, data given by these individuals is not always correct or timely, which is why most nations have used EMIS to eliminate mistakes and save time in information collecting (Abdul-Hamid, 2014). NEMIS data is comprehensive, taking into account elements such as student, staff, teacher population, and other metrics that are utilized to precisely assess the amount of resources necessary in education.

Even in a setting where the political economics of education indicates that policy analysis takes a second seat to political decision-making, policymakers frequently utilize education data as a point of reference for political judgments. The need for evidence-based judgments is driven by the goals of effectiveness, efficiency (including cost reduction), and justice (Abdul-Hamid, 2014). Political decisions may not always produce favorable results since they may be slanted toward specific features that do not accurately represent the actual situation.

Scientific planning is more productive especially in an educational system since data is a helpful tool throughout the planning process. This sort of planning reduces costs

by distributing resources more efficiently, and such resources would be distributed wisely to satisfy the most pressing demands first before addressing the least urgent ones. Given that the necessary information is readily available and timely, the added expense of refining such information is expected to be far lower than the indicated expenses of faulty data. Designing using obsolete data impedes effective policy implementation, particularly in terms of financial, necessitating the acquisition of fresh data through EMIS. EMIS data, in particular, facilitates resource allocation throughout the educational system. In an education system, for example, if enrollment data is only available nine months after the academic year began, there is nothing a state can do at the beginning of the school year to redeploy teachers in order to enhance student ratios across the school system for that year. Furthermore, delayed data causes concerns such as overcrowded classes, which may be futile and one year delayed.

In addition, the number of misallocated resources might be significant in the absence of the capacity to evaluate or examine an education system's information. In the past, misallocation of education resources has been due to misrepresentation of data presented to the government by the school Principals and people in-charge of learning institutions. Unnecessary dollars will be spent if the state handovers funding based on registration data that is erroneous (Abdul-Hamid, 2014). The inaccuracy leads to unsustainable resource allocation which means that some schools would receive more funds than others. Furthermore, some unscrupulous school Principals may misrepresent enrollment numbers in order to obtain greater government support, resulting in theft and the loss of government monies that might have been spent in other areas of the economy, such as health.

Meantime, secondary school capitation is based on NEMIS data, which must be accurate for equality in resource distribution. If this information is incorrect, meritorious students may be unable to use this capitation, making it impossible for school administrators to administer the school where these pupils were accepted. This was evident in Malava Sub-County, where school heads petitioned the chair of the KEPSHA and the birth registration department to expedite birth registration to beat the deadline of submitting NEMIS details prior to state allocating resources, a case that has been replicated in schools across the country, including Keiyo North Sub-County.

The government and the school have a role to play in ensuring that the birth certificates are ready for use in data compilation. Parents also play a greater role as they are required by schools to process their children's birth certificates ahead of time. However, there might be laxity during the birth certificate processing and this impacts negatively on the accuracy of the NEMIS data. Speedy birth registration and birth certificate issuance due to the cooperation between the government, parents and the school administration has led to better and timely presentation of NEMIS data.

Inaccurate data has frequently resulted in certain schools receiving more allocation than they deserve as per Wakhungu, (2019), which may in long run contribute to loss of cash through theft by some of unscrupulous school Principals as a result of government excess funds. According to (Abdul-Hamid, 2014), education stakeholders have the notion that EMIS is merely a database system. To some extent, this is correct, however the databases can be used for transparency and education structure reform.

People are an important component of EMIS because they not only guide data collection, administration, and dissemination, but they also lead the translation of data into statistics needed to assist decision making. As a result, it is vital to provide people charged with data handling with the appropriate skills, as well as to build a conducive setting for ICT infrastructure that ensure good support to the usage of EMIS. The government always provides support within the first few years when the EMIS is being implemented in the schools, and thereafter, school managers are expected to undergo proper training which should lead to better outcome in the long-run.

Afghanistan is a great example of how investing in an Education Management Information System may boost a country's overall monitoring systems. The EMIS had just a few primitive applications and a clunky centralized data collecting mechanism when the program began. Data on schools and pupils was formerly collected on paper, and legends abound of student information sheets being transported to Kabul disguised in vegetable carts. As the education sector expanded, the government recognized the necessity of precise data for decision making, which led to the implementation of EMIS (Silva, 2015). Kenya could be headed in the same direction leading to better education data management.

However, despite the success story of Afghanistan on the use of EMIS, there have been challenges about the accuracy of data. Statistics show that the total number of students including those enrolled in recent years differs from the statistics of EMIS. This is a case that is likely to be experienced in Kenya. Nigeria too had similar challenges. It was typical practice in the education industry to lack reliable and timely data. To address this dreadful condition, the country implemented the Nigeria NEMIS

(Nganjiozor, 2016). The goals of NEMIS were to strengthen Nigeria's education statistical system by linking and assembling various existing information systems, integrating and synthesizing all education data, quantitative and qualitative, into a single system, reliable, and producing more appropriate and timely data needed at every level of government for policy formation, strategic planning, and data analysis initiatives in education in Nigeria.

Given the promising development of EMIS in Nigeria, there were several obstacles, such as the uncooperative attitude of data generating agencies, particularly regarding funding and usage, the absence of a functional EMIS unit in some states, the inability of some states to implement stated EMIS activities and programs as planned, and the insufficient data management skills of EMIS staff (Nganjiozor, 2016). Similar difficulties are being encountered in Kenya with the usage of NEMIS. In Nigeria, the operation of EMIS was further hampered by a lack of appropriate energy (Trucano, 2006). The same case applies in Kenya where schools in rural areas might not have steady connectivity to the internet and appropriate ICT infrastructure that supports NEMIS adoption. However, the Kenyan government has been on the fore-front in addressing issues of electricity through the rural last mile electricity connectivity and fiber optic connectivity in order to boost access to internet.

2.2 Components of Education Management Information System

EMIS requires technological infrastructure such as telephone lines, intranet, computers, internet, among other ICT devices (Muhia, 2016). It also needs individuals with the necessary abilities and attitudes, as well as the proper processes.

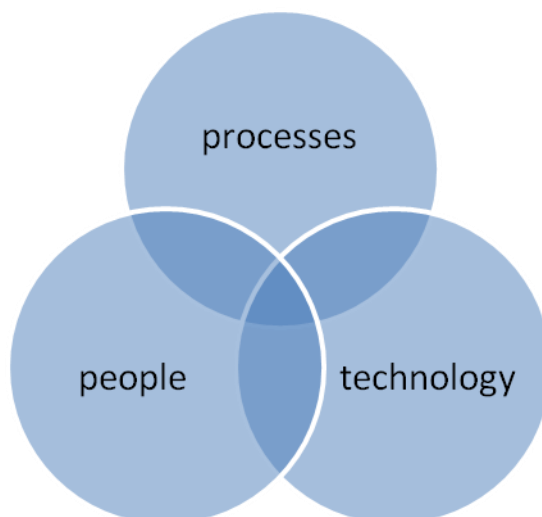


Figure 2.1: EMIS Components (Source: Marcia, 2011)

2.3 Description of Kenya's Education Management Information System

The Ministry of Education launched the EMIS in 2017. It is an online-based platform for data handling and management system that gathers data from various institutions for learning, processes them and give reports of the status of predetermined indicators, and provides the education sector with a solid platform for effective administration to ensure that every student in secondary schools is counted (Rotich, 2019). NEMIS's major purpose was to assist MoE in acquiring accurate and up-to-date information about student in various learning institutions. It was also to allow the ministry to obtain precise and reliable information for efficient planning and resource allocation; NEMIS solves the shortcomings of prior erroneous data gathering systems. For example, school Principals must supply reliable data, which is critical in developing a sustainable education system.

NEMIS operates on a lower level, primarily at the school level. It compiles data based on information given by school administrators. Fortunately, the data is consolidated, which aids in appropriate student identification across the educational system. Based

on the student data given by the system, the government may distribute education resources appropriately. Despite all of the accruing importance of EMIS, the structure has not fully been completely realized throughout the nation due to a variety of problems (GOK, 2009).

The Ministry of Education, for example, had various challenges while using NEMIS, such as data changes and a lack of birth certificates. Parents might have been reluctant in providing the needed student documentation like birth certificates, and school Principals might be blamed for laxity in student registration and failing to work with the government offices to attain speedy student registry on the NEMIS portal.

Some counties like Elgeiyo-Marakwet County where Keiyo-North Sub-County is found experience slow internet connectivity which impacts negatively on the schools' capability to register all students in NEMIS within the given time. Furthermore, counties at risk of inadequate internet access may have challenges with electrical connectivity, as well as technical obstacles such as a negative attitude toward internet use.

Some school managers might have issues with internet use during student registration due to negative attitude towards internet use. Negative attitude towards internet use might affect efficiency in data collection as the managers might not be keen on providing accurate data due to the already acquired attitude. It was further found out by Ouma, (2019) that some school heads were uploading data from cyber cafes and thus compromising the authenticity and accuracy of the information, the use of cybercafé might also pose serious data breach leading to data mining which might undermine the whole NEMIS system.

The Kenyan government developed an infrastructure-related strategy through the Ministry of ICT to effectively provide inexpensive and widespread accessibility to ICT services. It recognizes that other components cannot exist in the absence of supporting infrastructure (GOK, 2016). Despite this effort, many government institutions, especially secondary schools, were unable to access ICT infrastructure necessary for EMIS implementation. However, school administrators have failed to collaborate effectively with the government in order to establish the necessary ICT infrastructure to facilitate NEMIS adoption. GOK, (2016) highlighted that security of the data has also been jeopardized, which runs counter to the ICT policy more so on data protection, secrecy, and the honor of citizens' information. Even after the implementation of NEMIS in 2017, there are still examples of faked documents in co-curricular contests in which persons who are not students engage in sports activities unlawfully according to the Secretary General of the KSSSA (Mativo, 2019). This demonstrates that NEMIS is not completely deployed, even within the MoE. According to the KSSSA Secretary General, the implementation of NEMIS would prevent age cheating and impersonation since schools will be required to enter the names of students who wish to compete in any competition in the NEMIS before they are permitted to compete.

According to an EMIS review, EMIS workers at the national, regional, Sub-County, and school levels do not have adequate skills in the use of ICT devices for use in EMIS. It also reveals that technological investment, notably in ICT infrastructure for EMIS (Walekhwa, 2016), is insufficient, which explains why NEMIS implementation in secondary schools has been troublesome. Data captured in an ICT device is as precise and timely as the first handler who collected, processed, and stored it. This

was evident in a report delivered in parliament by Kenya's departing Cabinet Secretary MoE, who noted duplication of birth certificate digits and typos in birth registration numbers as two of the MoE's problems.

If data is not collected, assessed, and stored appropriately, the use of an ICT device will not be acceptable for resource allocation and decision making. The introduction of NEMIS was meticulously planned because it gathered vital information about a school's workers and students. However, the system's distribution did not include teachers who are intended to utilize it. This application does not address who is expected to enter data into the system and how. This necessitates evaluating the data gotten, analysis, and storage techniques as well as the abilities of the data handlers, the majority of whom are school Principals.

A study undertaken by Muhia, (2016) in Limuru Sub-County established some of the factors that hinder effective use of EMIS as inadequate technological infrastructure that support EMIS and inadequate computer literacy skills among Principals. The study did not, however, comprehensively determine other factors that influence EMIS use, such as Principals' skills and training in data capture, analysis, and storage for use in EMIS for decision making in resource allocation, level of acceptance of EMIS use, management support, and the quality and timeliness of data provided by relevant stakeholders were also not factored in.

The study by Oduor, (2019), indicated that the challenge of internet access may differ from that of other locations of the nation. For EMIS to be used within the school setup, intranet is equally necessary. With Limuru Sub-County being closer to the Capital City of the country, accessibility to ICT infrastructure might not be the same

as to other areas of the country that are far away from the Capital City. ICT skills of people also vary according to regions depending on how frequent they always interact with ICT facilities.

According to (Oduor, 2019), 170 candidates in Elgeiyo-Marakwet County had their KCSE registrations canceled owing to birth certificate number inconsistencies. This validates presence of problems in data quality provided by various interested parties as well as the data acquisition competency of individuals involved in candidate registration, with possibilities of affecting NEMIS use as the same individuals who enroll candidates for KNEC are the same entrusted with the use of NEMIS. In addition, the majority of secondary school heads of staff have not completed the TMIS returns, which are done in a manner comparable to the NEMIS system. For these reasons, the main objective of this research was to establish the level of preparation of secondary school Principals in Elgeiyo-Marakwet County's Keiyo North Sub-County to utilize NEMIS in making decisions for allocating resources in school administration.

NEMIS supports education programs through sufficient funding which supports staff training and seeks to provide capacity at every level. This includes training-capacity which the managers should embrace, but some school Principals are not keen enough about taking online capacity building programmes. Lack of training on those with the responsibility of using NEMIS might impact negatively on its adoption.

Again, policy makers' duty includes deciding on trends like Key Performance Indicators which are built in the project design support. Although the policy makers are working on a self-sufficient system there are still loops which need proper

addressing. NEMIS has not been able to address issues like student-teacher ratios and percent of students reading at grade level which still impacts the educational outcomes in Kenyan secondary schools.

Further-more, there are limitations which affect emerging technologies and approaches to NEMIS adoption; for instance not all schools have tablet computers which are useful for accessing e-books. Additionally, most parts of rural Kenya has inaccurate Google earth and digital mapping which makes it difficult to conduct digital mapping during resource allocation. Again, there might be less planning simulation and business intelligence in Kenya making future plans increasingly difficult to predict.

2.4 Empirical Literature Review

This section consists of the following: adoption of NEMIS, acceptance level, ICT infrastructure and use and skills acquisition on data handling.

2.4.1 Adoption of NEMIS

In today's worldwide market, acceptance of developing knowhow preceding to their demonstrated worth is both suitable and expected. Companies that fail to adapt their approach risk falling sales, obsolescence, and insolvency (Keri, 2015). Academic institutions (along with secondary schools) are no exception in this regard.

Being a new technology, secondary schools are supposed to adopt the use of NEMIS in a short span of time so as to keep in touch with the government trends in relation to education. School Principals are supposed to embrace this new emerging technology in education management as fast as possible so as to keep track with current trends in education and ensure that their schools don't miss out on government capitation. Just

like firms can face obsolescence, secondary school Principals and their schools can also face 'information obsolescence' related to NEMIS, thus ending up missing government capitation that is necessary for running of schools. Consequently, this is likely to hinder their rendering of quality service to their learners because of lack of government funds.

The use of developing technology in business has been extensively researched, but the outcomes have been mixed (Brandyberry, 2003). Furthermore, research on the use of NEMIS is quite scarce. NEMIS is still a relatively new idea, with just a few nations incorporating it into their school data management systems. For instance, the emergent technology is in the budding stage and has little research and therefore this study adds to the little existing research on it.

According to a study conducted by Pesi Amaria (Keri, 2015), in their decision-making process, non-research and research-based institutions of higher learning primarily considered the following factors: the need to embrace IT and other newer technologies, the cost incurred in IT implementation, profits resulting from investment, ownership cost, competition within academic as well as strategic and objectives, comparable IT use as well as emerging technologies.

They also took into account productivity, recruiting top students, instructors, and staff, and the quality of computer services. Furthermore, the amount of employee training was seen as the least important in the policymaking process for embracing IT evolving technologies. This study on the preparedness of secondary school Principals and the adoption of NEMIS looked at ICT skills acquisition of Principals as a variable that affects the adoption of NEMIS.

Juma (2011) found that ICT had been adopted to some extent in Kisumu County, Kenya, but that more effort was needed to address issues that remained problematic, such as insufficient funds, a lack of a proper ICT implementation plan, and insufficient technical personnel, which this study sought to discover by looking at the level of readiness of secondary school heads and the embracing of NEMIS, an emerging technology in the field of education management.

Kiptoo (2013) arrived at the conclusion on the acceptance of computer-based MIS on service quality in Kenyan middle-level institutions that institutions recognize the need to embrace computer-based MIS on performance delivery and have made attempts, such as the purchase of relevant MIS mechanical aids, and the implementation of public policies to promote MIS adoption. However, Kiptoo observes a gap in the use of these equipments in information management, owing to a lack of adequate training on the use of available equipment, the fitness of MIS equipment for the aim, and an absence of appropriate model parameters between manual and digitized information procedures. This is an indicator that adoption of MIS has challenges like inadequate skills training on people who use it and lack of utilization of ICT infrastructure of which adoption of NEMIS is not an exception. Adoption of new technologies such as NEMIS in school management necessitates a multifaceted approach that involves increasing acceptability, exercise and assistances, and strengthening the ICT infrastructure that enables the implementation of this new technology.

2.4.2 Principals' Acceptance Level

Use of education management information system in education systems all over the world is becoming an increasingly common phenomenon like in Nigeria and Tanzania. Kenya, for instance, has adopted NEMIS in the management of its

education. School administrators are required to admit students through the system, capture information on learners, staff, upload learners' photos as they will be used in sports and medical cover for students through NHIF and upload capitation receipts about their schools into the NEMIS system.

The emerging technology calls for school Principals and head-teachers to get prepared to adopt this new technology in the education sector. Unfortunately, some Principals might not be ready to adopt the technology and the government officials have a duty to educate such school managers on the importance of this new technology in the education system.

The Kenyan government, through the Ministry of Information, Communication, and Technology, understands that the SDGs will spur action in crucial sectors for mankind and the earth during the next fifteen years. The SDGs' implementation covers science, technology, and innovation, capacity building, data monitoring, and accountability, among other concerns critical to the ICT industry (GOK, 2016). ICTs are required as a vital catalyst in the three pillars of sustainable development (economic development, social inclusion, and environmental preservation). The role of ICT in attaining the SDGs will be critical. However, there are several factors that affect the adoption and use of new technology including availability and access of ICT resources, nature of work, national and institutional ICT policy and level of training and skills of individuals. This is explained in the UTAUT model that identifies four key factors, namely: performance expectancy, effort expectancy, social influence, and facilitating conditions (Venkatesh et al. 2013). According to (Venkatesh et al. 2013), the degree to which an individual feels that adopting the system will assist him or her in achieving advances in work performance is described as performance expectation.

Personal and socio-cultural aspects were revealed in a study done by Petronila (2016) on factors impacting the adoption and usage of ICT within collaborative research in Kenya, such as perceived benefits and existing research cultures and practices, as well as demographic factors influenced performance expectancy. A technology that is viewed as improving work performance while saving money is predicted to be more widely adopted (Venkatesh et al. 2013). This is true with Principals of secondary schools. If Principals and those teachers who assist in uploading data into the NEMIS portal feel that it will enhance efficiency in the management of education resources, then they will be more than ready to adopt its use. On the contrary, when they feel that NEMIS will not enhance efficiency in the management of education resources, they will not be ready to accept to adopt and use NEMIS.

Petronilla (2016) discovered that regular internet use considerably decreases management and control challenges, which is likely to have a beneficial influence on perceived usefulness, leading to increased rates of adoption and use. This is true for Principals and other teachers who frequently use the internet for their own purposes or for school work. By frequently using the internet, Principals and teachers in-charge of ICT are likely to develop a positive attitude and appreciate the need to embrace the use of NEMIS.

According to (Venkatesh et al. 2013), perceived ease use of new technology impacts on acceptability and use. This includes the difficulty of learning and interacting with the system, as well as the time and effort required to execute a task. Technologies considered as complicated and difficult to use will be adopted more slowly than those perceived as simple and easy to use. This is true for secondary school Principals and teachers who are active in the usage of ICT. If secondary school Principals and

instructors who deal with ICT believe that NEMIS employs difficult processes, they will be reluctant to embrace the usage of National Education Management Information System in their schools, and if they believe that the technology employs simple processes, they will quickly embrace it.

Nonetheless, the use and acceptance of technology varies from user to user. A technology may be popular and accepted by some users, but the same technology might not be popular and accepted with other users (Athar, 2014). In the education domain, the main players are Principals and other teachers who happen to be male and female and their level of acceptance of new technology might not be the same as was observed by Ananya (2016). According to Ananya (2016), gender has a crucial influence in deciding the desire to adopt new technology and in the context of information technology usage, which includes computers, email services, and electronic data management systems. Gender influences technology adoption since men are shown to be more technologically capable than women, currently there is increasing number of women joining administrative positions which includes Principals of secondary schools and based on this argument, acceptance of NEMIS as a new technology is likely to face some difficulties. Equally, age plays a significant role in acceptance and use of new technology. Young people tend to be more ready to adopt new technology than old people. Principals of secondary schools are relatively older compared to other teachers due to the Teachers Service Commission policy that considers experience as a factor for promotion. For one to be considered for promotion, he or she should have worked longer in the teaching profession to get the required experience.

There are several ideas that outline the main variables for effective information system adoption and technology acceptance in enterprises. Some of these ideas contend that the quality of the information system and its simplicity of use are important factors in the system's adoption (Yaser, 2014). In cases where Principals and teachers in charge of ICT believe for instance that uploading education data to the NEMIS is not easy, the adoption rate of this new technology will be slow and difficult. However, if they believe that uploading data into the system is simple and easy to handle, they will be more than ready to adopt its use within in a short span of time.

People tend to support what they help create (Wako, 2003). If people who are supposed to implement EMIS are not involved in the initial stage of implementation but later forced to adopt the system, it will be difficult for them to accept to adopt the system. They are even likely to sabotage the system. The government, through the Ministry of Education, should therefore involve school heads and teachers in charge of ICT in secondary schools by asking them to contribute on how best NEMIS can be improved so as to capture accurate and relevant information on students, staff and other educational resources and information that it requires for proper planning and resource allocation in education.

In Kenya, secondary school Principals were reported to have rejected NEMIS, which generates information that the government uses to disburse cash to schools via the MoE. They say that an identifying error code is failing to acknowledge deserving students' capitation money and have requested that the system be discontinued. The Principals would ask the government to return to the manual approach of performing

headcounts in schools to determine money distribution until the error is remedied as highlighted by Wanzala (2019).

According to Kenya's Cabinet Secretary for Education, his ministry lacks an accurate and credible database on the actual number of students and school that may be of use in making informed judgments (Wanzala, 2019). In a study presented in the beginning of 2019 to the National Assembly, the system had only collected data on half of all public-school students. According to the report provided by the PS in charge of Education, just 6.8 million learners were caught in the system out of a projected 13 million (Wanzala, 2019). This is contrary to what is expected about the NEMIS system having been launched in the year 2017 by the then Cabinet Secretary, Ministry of Education. Two years later, the system had only captured 50% of learners while the other half had not been captured. This is a clear indication that there is inefficiencies in the adoption of NEMIS. The Permanent Secretary (MoE) stated that 500 schools had not provided student details on the platform by February 2019, and thus the government could not release cash for about 300,000 students. Most of the affected learners were in day schools (Wanzala, 2019), of which most fall in the category of Sub-County secondary schools, meaning that it is the Sub-County schools that face a lot of challenges when it comes to the adoption of NEMIS as compared to other secondary schools like national, extra-county and county schools. This is an indication that Principals are facing a lot of problems in adoption of NEMIS as was confirmed by KESSHA Chairman who noted that NEMIS creates more confusion than order (Wanzala, 2019).

2.4.3 ICT Skills Acquisition and Data Handling

Acquisition of ICT skills requires training, which is the process of learning the skills that you need to do a job while skills are the ability to do something well (Sally, 2005). Employee training is an organized approach for acquiring information or skills for a specific goal (GOK, 2011). The specific skills acquired through staff training are meant to improve service provision and increase efficiency in completing given tasks.

Training aims at enhancing ideas, skills and attitudes that need developing in the trainee. The commonly used methods of training at work are: induction training, on-the-job training and off-the-job training. Induction training enables a new recruit to become productive as quickly as possible; it reduces the time wasted at work and improves productivity. The length of training will vary from job to job and depends on the complexity of the job. The areas included in this type of training include learning about the duties of the job, meeting new colleagues, seeing the layout of premises, learning the values and aims of the internal workings and policies of the organization (GOK, 2011).

On the other hand, on-the-job training is where employees receive training whilst remaining in the workplace. The main methods used here include demonstrations or instruction, Mentoring, job rotation, and projects are examples of on-the-job training, whereas off-the-job training occurs when employees are not present at work. Day release, remote training or evening classes, block release, bridging courses, sponsored courses, and self-study are among the strategies employed (GOK, 2011). (Wako, 2003) divided training framework into three levels: basic, medium, and progressive. Not every staff will require cutting-edge training. At the same period, simple exercise cannot be enough to prepare workers to manage EMIS functions efficiently. This

points out to the fact that training for people who handle any EMIS (including NEMIS) is necessary for quick adoption. Staff training promotes employee motivation, which leads to greater productivity, performance, and loyalty to the institution since employees will feel appreciated at work.

Skills acquisition on data handling is a crucial component in the adoption of National Education Management Information System. Al-Gharaibeh and Shehadeh, (2013) in their study advised that staff be taught on how to use information systems to improve their performance, the study was aimed at identifying the impact of MIS on the productivity of governmental organizations. Wako, (2003) emphasizes the importance of training for those who handle EMIS, particularly at the start. In nations that have used EMIS successfully, EMIS at the national level provides ability and technical assistance to the autonomous and scattered data evaluation at the local and state levels where it has been effectively implemented like Malaysia and Australia. It carries out specialized operations such as educational services to increase the state's capability to take duties and participate in the development of public EMIS (Wako, 2003). This follows therefore that personnel responsible in handling an education information system like NEMIS in secondary school need to be empowered by the state in terms of training so as to enable them acquire the required expertise in handling the system.

Several studies have demonstrated the contributing role of training and skills in support of successful adoption and utilization of any information system. Converting data into useful information, as well as for database management, is a scientific exercise that requires experienced and knowledgeable employees (Hassan, 2014). This necessitates training for school Principals and those in charge of ICT in secondary schools to aid in ICT skill acquisition. Training in data handling will

provide them with the essential capabilities for NEMIS adoption. As the primary source of educational information, school heads and teachers of ICT require additional involvement in terms of training, improving efficiency, and increasing responsiveness of the use of such relevant data for decision-making as well as planning. This requires the government, through the Ministry of Education, to train Principals and teachers of ICT in relevant ICT skills to enable them to use an Educational Management Information System with ease.

In research conducted by Muhia, (2016), in Kiambu, Kenya, it was discovered that, while the employees from the education office in the Sub-County were computer literate, the abilities of the school heads were inadequate, indicating the need for in-service training. Similar incidents are anticipated to occur in other parts of the Kenya. Limuru Sub-County is closer to Nairobi, Kenya's capital city; as a result, it is predicted that it would be able to recruit qualified laborers, especially teachers, more easily than other outlying places. The lack of computer literacy abilities is likely to be much more severe in distant areas.

Another study conducted by Petronilla, (2016), revealed that some topics are really difficult since they must be explained on paper and sketching as opposed to specific training. There is a strong requirement for the trainees to participate in group discussions. This is due to three factors such as a lack of recognition for the power of ICT in supporting a wide range of activities, a lack of basic knowledge of various innovations that could support the implementation referred to as best conducted by face-to-face meetings, or a culture defined by valuing traditional ways of doing things, and an unwillingness to change. People are always resistant to change and will always want to do what they have been doing over the years and this is more

pronounced by age. It is difficult for old people to embrace new ways of doing things. Principals and teachers in charge of ICT in secondary schools in Keiyo North Sub County, just like other people, will be resistant to change and will not be ready to adopt new technologies in EMIS like the national education management information system. This call for training to first change their attitude and the wrong perception they may have towards the new technology. Knowledge is critical in handling any new technologies. Without training, new knowledge required to handle new technology will not be acquired. As a result, it is anticipated that Principals and teachers in charge of ICT would find it difficult to accept the national education management information system, highlighting necessity training of school Principals and teachers responsible of ICT in secondary schools.

Petronilla, (2016), goes on to say that individuals with rudimentary computer abilities are more likely to utilize the internet. More information and abilities may imply a smaller amount effort in utilizing numerous technologies, resulting in improved adopters. However, a lack of specialized training for computer applications designed to do certain tasks makes learning harder and may lead to lower rates of adoption of new technology. When uploading student or staff data, NEMIS makes use of the internet. Principals of schools and teachers in charge of ICT in secondary schools who have basic computer abilities are likely to be frequent internet users. As a result, they have better knowledge and abilities in utilizing the internet.

Teachers in rural schools might have little access to internet and new emerging technologies and they would need more training than those in urban areas, unfortunately, they would be the least interested people due to attitudes towards technology. Thus teachers in rural areas need to be trained on the benefits of NEMIS

and its impact on the whole education system. There is a great need therefore for the government to work harder to reach to Principals in the rural areas like some parts of Keiyo-North Sub-County so as to bring them on board with schools in urban areas which continue to thrive as they have adequate access over those in the rural areas.

With the introduction of NEMIS in Kenya in the year 2017, specialized training on how to handle the system has not been common with most Principals and those teachers in charge of handling ICT and uploading of data into the NEMIS portal in secondary schools in the country. This therefore calls for frequent training to enhance efficiency and develop competencies necessary in the embracing of NEMIS in various Kenyan secondary schools including Keiyo North Sub-County.

2.4.4 ICT Infrastructure Availability and Use

The arrangement of technical tools and resources used to transmit, generate, disseminate, store, and manage information is referred to as information and communication technology (GOK, 2011). Technologies do not usually refer to computers; it is a common misperception that ICTs solely refer to computers and computing-related activities. Fortunately, this is not the case, even if computers and their applications play an important part in modern information management (Noor-Ul-Amin, 2013). According to a UN report, ICTs include telecommunications equipment, internet service provision and services, media and broadcasting, commercial information services, libraries and documentation centers, and other related information and communication activities (UNESCO, 2002).

To an education manager like a Principal of a secondary school, ICTs offer a lot of benefits including effective planning, record keeping, enhanced decision making,

effective communication and resource management. For all these to be achieved, school managers who include Principals of secondary schools must work towards acquiring the appropriate hardware and software. They should ensure that the ICT infrastructure is well maintained. Some of the requisite ICT infrastructure include; computers, connectivity within the institution to the internet, power or electricity among others. They should also ensure good maintenance of the ICT infrastructure. By so doing, adoption of NEMIS will be easy and fast.

ICT infrastructure constitutes the facilitating conditions which Venkatesh et al. (2013), defines as the degree to which an individual believes the organizational and technical infrastructure exists to support the use of an information system. Use of computing technologies is highly dependent on supporting infrastructure for instance a school can fully utilize the ICT infrastructure if they have access to the laptops, internet and knowledgeable personnel.

In a survey conducted in 26 countries by Pelgrum, (2001) and another in Malaysia by Atan and Idris (2004), school management claimed that a lack of infrastructure such as energy, a lack of technical assistance, and the issue with data security hampered efficient use of an information system. Similarly, the most significant impediment to successful use of management information systems is an inadequate infrastructure. The same is true for some schools in rural Kenya, where there is poor access to ICT infrastructure, electricity and technical support.

This indicates that ICT infrastructure is critical in supporting NEMIS adoption. When Principals and teachers of ICT in secondary schools know and think that their schools have adequate contemporary computers and reliable internet access, they will be eager

to adopt and use the National Education Management Information System. In Petronilla, (2016) research, a lack of dependable internet access was commonly mentioned as a key impediment to the employment of internet-mediated technology for collaborative work. Muhia, (2016) study on the evaluation of EMIS in Kiambu, Kenya found a similar condition in most secondary schools across the country. He similarly discovered that more functioning computers, ICT gadgets such as printers as well as internet access were needed to improve the quality of the EMIS in the schools and the Sub-County.

This is the case in Keiyo North Sub-County as most secondary schools had challenges in internet connectivity. Consequently, this becomes a stumbling block to the adoption of NEMIS in the Sub-County. The ministry of education should put more emphasis on the importance of network coverage and provision of technical support in Keiyo North Sub-County in order to improve adoption of NEMIS registration of students.

Kenya's ICT policy recognizes that increased adoption of internet-based and other ICT-related services necessitates suitable infrastructure to enable social and economic growth, and thus infrastructure policy is strongly focused on how to effectively ensure affordable and widespread access to ICT services. ICT Infrastructure is therefore the essential basis of an integrated ICT eco-system (GOK, 2016), and all other elements of an education management information system cannot function without an enabling ICT infrastructure.

Kenya's ICT policy states that the government would continue to encourage the availability and access to efficient, dependable, and inexpensive ICT infrastructure at

the county, national, and international levels. The Kenyan government will also encourage the development of high-speed, mobile, secure, and ubiquitous next generation ICT network infrastructures through high-speed linkages and high-speed wireless broadband networks inside cities and villages, according to the policy.

Internet-based businesses will be encouraged to expand their worldwide presence. This aims to supply and implement adequate internet capacity for schools, universities, and businesses, as well as to provide effective, dependable, and protect internet infrastructure (GOK, 2016). However, most of the internet companies are private entities and offer the services at high cost which might not be affordable to many especially secondary schools. If the government regulates charges by internet service providers, there will be increased competition in the market making it possible for schools to afford internet services. This is not the case yet, as high internet charges continue to be witnessed in different parts of the country, Keiyo North Sub-County included.

Many of secondary schools in Kenya are still grappling with the issue of connectivity to the internet, and the majority of these institutions are located in remote places where it is difficult to reach. The then CS of the Ministry of Education ambassador Amina Mohammed in 2019 corroborated this by stating that the ministry experienced issues, including sluggish internet connections in most counties, which slowed the uploading of NEMIS data. Downtime and poor connectivity were issues in overstretched regions. The Cabinet Secretary announced that the ministry will enhance internet capacity to handle growing traffic on the NEMIS website. She also mentioned technological hurdles, such as a negative attitude about internet use (Ouma, 2019). This runs counter to the Kenyan government's ICT policy goal of

fostering a systematic and complete growth of ICT infrastructure and services, with a focus on rural and urban underprivileged regions.

Most secondary schools lack internet connectivity or find it slow, as evidenced by the communication authority of Kenya (CAK) offering to connect to high-speed internet less than a hundred public secondary schools in Bungoma County after selecting them based on their ICT preparedness, with giving preference to institutions with computer laboratories (Wamalwa, 2016). This is an indication that some schools within Bungoma County were not ready in NEMIS adoption. The same scenario is replicated in other secondary schools in counties like Elgeiyo-Marakwet where Keiyo North Sub-County is situated. Implementation of ICT is a national agenda being spearheaded by the national government, although this has not been achieved, which contradicts the government's ICT policy goal of constructing efficient, high-capacity national ICT infrastructure to improve service delivery to the public, with a focus on governance, health, and educational institutions, as clarified in (GOK, 2016).

In a study conducted by Cuartero and Role (2018) to show the extent of effectiveness on the successful execution of EMIS as part of educational management functions in elementary schools in Surigao Del Sur, Philippines, it was discovered that the accessibility of ICT facilities and geographical location vary depending on the type of school. The extent to which EMIS deployment varies by school type, such as central, non-central, and multi-grade schools, Cuartero and Role (2018).

This is a case replicated in most parts of the world, Kenya included. In Kenya, secondary schools are classified as Sub-County, County, Extra-County and National schools. These schools vary in terms of enrolment of students and the amount of fees

they charge. National schools for instance charge relatively higher fees than Extra-County schools. On the other hand, Extra-County schools charge higher fees than County schools whereas according to the MoE pricing rules, county schools charge greater fees than sub-county schools. National schools are expected to charge ksh.53544, Extra-County and County schools ksh.40535, and Sub-County schools ksh.22244, which the government pays as tuition fee. The same ksh.22244 is paid by the government to students at National, Extra-County, and County schools to cover tuition (GOK, 2018). This is an indication that the amount of funds collected by National schools is higher than that collected by Extra-County, County or Sub-County schools.

With more financial resources, National schools are able to purchase modern ICT facilities that are of higher quality and efficient as compared to Sub-County schools which collect less fees. National schools are also able to facilitate training of teachers by sponsoring them to attend many seminars and workshop on the use of modern technology on EMIS as compared to Sub-County schools. Sub-County schools face a lot of challenges ranging from limited financial resources to inadequate teaching staff. They are financially strained and thus not able to purchase modern ICT facilities which are efficient and of better quality that are necessary in the adoption of NEMIS. Further-more, Sub-County schools lack adequate trained teaching staff who can handle new technology like NEMIS.

Schools also vary in their geographical location as pointed out by Cuartero and Role, (2018). Most National and some Extra-County schools are located closer to urban areas while most County and Sub-County schools are located far away from the urban areas. Urban areas in Kenya are relatively well developed in terms of infrastructure,

be it road, water, electricity and communication which tend to attract more well-skilled and knowledgeable workforce that includes teachers. This is also true in Keiyo North Sub-County, where certain schools, such as national schools, are located in urban areas while others, such as Sub-County schools, are located in rural regions. It is clear that schools in Keiyo-North Sub-urban County's regions have more access to a well-developed infrastructure than those in the Sub-rural County's sections.

Most teachers will quickly be willing to transfer to schools located in urban areas because of the development of infrastructure which make them enjoy better living standards. This will make those schools located in urban areas better in terms of staffing as compared to those located far away from the urban areas. With better staffing, the workload of teachers is reduced and school managers will be willing to sponsor some teachers to attend to seminars and workshops during school working days without the fear of students not being attended to because of teachers' absenteeism. Such seminars and workshops equip teachers with new knowledge and skills required to handle emerging technologies like NEMIS.

Additionally, since most teachers are willing to teach in schools in urban areas in Keiyo North Sub-County, Urban schools are staffed with most skilled teachers. During recruitment of teachers, urban schools will attract teachers with varied skills hence making them choose those teachers with top performance and higher skills leaving those with little skills, who would then resort to the rural-based schools. High skilled teachers in the urban schools' impact knowledge to the students leading to higher performance which in-turn attracts more students who pay more fees due to the increased numbers hence increasing the financial ability of such schools making them to be able to invest more in ICT infrastructure and capacity-building of teachers in

new technologies like NEMIS. Furthermore, highly qualified instructors have a good attitude toward teaching and the acceptance of new technology in the school system, making it possible to implement new technologies in the Sub-urban-located County's schools.

Teachers in urban schools can also attend part-time training on their own about new technologies on information systems because most training institutions are located in urban areas. These teachers already have a positive attitude towards new technology and would be willing to learn more about emerging technologies. Urban areas also allow part-time training during weekends and evenings, with schools having accommodation facilities within the school compound and most teachers live in well-furnished teachers' quarters which make it possible to attend the part-time training.

The training is vital because teachers especially those in charge of ICT in secondary schools will be equipped with necessary skills required for the adoption of NEMIS. The level of training differs between teachers located in urban areas to those teachers those situated in the rural areas. The disparity in training and knowledge brings the difference in the adoption of the new technology. Consequently, the schools in the urban areas would be well-equipped to adopt the new technology than schools in the rural areas of the Sub-County.

2.5 Summary of the Reviewed Literature and the Gap therein

According to the analysis of literature, secondary school administrators have rejected NEMIS, stating that an identification mistake code is preventing funding from being allocated to qualified pupils. Principals want the Ministry to resort to the manual technique of conducting headcounts in schools to determine resource allocation until

the error is fixed (Wanzala, 2019). This indicates that there is a problem with the adoption of NEMIS which calls for an interrogation on why it is not being adopted faster. In a report submitted to Kenyan parliament in 2019 by the then PS ministry of education it showed that only half of learners had been captured on NEMIS two years later after its introduction in 2017, this pace of adoption onto the system is slow and therefore calls for an interrogation on why NEMIS is being adopted at a slower pace than expected.

The Principals' attitude towards NEMIS might slow down the adoption of the student identification and resource allocation. The suggestion to revert back to the manual system might open loops where Principals offer untrue representation of the students' data on enrollment thus impacting negatively on fair resource allocation. Initially, Principals offered untrue data aiming at pocketing the extra financial resources from the government. The study therefore establishes the need to minimize such wastage on resource distribution throughout the education system by the adoption of NEMIS.

Frequent internet use significantly reduces management and control problems, this is expected to have a beneficial effect on perception, resulting in increased rates of uptake and because NEMIS is a component of the internet, it is therefore necessary to determine how frequently Principals and teachers in charge of ICT in Keiyo North Sub-County interact with the internet. Furthermore, ICT skills are important for adoption of any new technology like NEMIS, of which this study seeks to establish on how well are Principals and teachers in charge of ICT in secondary schools are prepared in terms of ICT skills acquisition to handle NEMIS.

More-over, this study on the adoption of emergent NEMIS student registration in Keiyo North Sub-County addresses issues like the schools preparedness to register the students on the NEMIS portal and how the Principals' attitude would affect the implementation of data collection and how the government can promote fairness in resource distribution within the school system.

CHAPTER THREE

RESEARCH DESIGN AND METHODOLOGY

3.0 Introduction

In this section is discussed, the research concept, the target population, sample size and sampling methodologies, research tools, instrument validity and reliability, pilot study, data collecting, and data processing procedures.

3.1 Research Design

This study made use of a concurrent triangulation research design with a mixed method approach, which includes philosophical assumptions that guide the direction of data collection and analysis in addition to a combination of qualitative and quantitative data in single research. Its core idea is that combining qualitative and quantitative methodologies yields a more comprehensive grasp of research challenges than either strategy alone (Creswell, 2007). This methodology is applicable to this study as it allows both qualitative and quantitative data to work together to support the researcher's topic of interest; it also allows for the comparison of qualitative and quantitative data.

3.2 Study Area

Keiyo North Sub-County is one of the four Sub-Counties of Elgeiyo- Marakwet County, the Sub-County borders Baringo County to the east, Uasin-Gishu to the west, and Marakwet West and East to the north while the Southern part boards Keiyo South. The larger Elgeiyo-Marakwet County's secondary school enrolment is 25,165 students (<http://www.elgeiyomarakwet.go.ke>. Retrieved: 26/09/2022). The researcher sampled all of the 30 registered public secondary schools in Keiyo North Sub County. (See Keiyo North map, Appendix IV, page 115).

Keiyo North Sub-County was chosen as a study area due to the fact that it falls under Arid and Semi- Arid Land (ASAL). About 57% of the residents live below the poverty (<http://www.elgeiyomarakwet.go.ke>. Retrieved: 26/09/2022). The students' transition rate from primary to secondary in the entire county is 72% and from secondary to Universities and other tertiary colleges is 39.8%. This is an indication that the 100% transition rate national objective is far from being achieved. This coupled with challenges associated with the ASALs makes the County's efforts to eradicate poverty to be hard to attain.

3.3 Target Population

A population is any institution or group, people or items who share some traits (Sally, 2005). The research took into account secondary school principals' and teachers in charge of ICT perspectives, the Sub-County Director of Education's feedback on NEMIS implementation, and the amount of ICT infrastructure in the schools, such as internet access. The Sub-County contains thirty secondary schools, one National, three Extra-County, four County, and twenty-two Sub-County schools (See Appendix X, Page 121). The researcher randomly chose samples from one National, four County, three Extra-County, and twenty-two Sub-County secondary school principals and teachers in charge of ICT in Keiyo North Sub-County of Elgeiyo-Marakwet County in Kenya, as well as one Sub-County director of education. As a result, thirty (30) principals, thirty (30) teachers in charge of ICT, and one (1) Sub-County director were sampled. This resulted in a target population of 61.

3.4 Sampling procedure and Sample size

The researcher classified the secondary schools as National, Extra-County, County, and Sub-County. Using the census method, the researcher chose all Principals and

teachers in charge of ICT from various schools. Additionally, the Sub-County Director of Education was specifically picked. This guaranteed that each sub-group was adequately represented. This resulted in a population that was 100% bigger than the recommended minimum of 20% (Gay, 1996). As a result, the desired population was better represented, and all principals and teachers in charge of ICT were chosen, avoiding prejudices that can occur in a research.

Table 3.1 Target population

Category	School	Target Population (N)	Sample Population (n)
Principals	National schools	1	1
	Extra County schools	3	3
	County schools	4	4
	Sub-County schools	22	22
Total		30	30
Teachers In Charge of ICT	National schools	1	1
	Extra County schools	3	3
	County schools	4	4
	Sub-County schools	22	22
Total		30	30
Sub-County Director		1	1
Grand Total		61	61

Source: Author's compilation, 2019

3.5 Research Instruments

Data was collected in a timely manner by employing a structured interview guide to the Sub-County Director of Education that contained structured open and closed ended questions. Questionnaires for Principals and Teachers in charge of ICT were also used. Questionnaires are also ideal for literate populations since the essential

information is easily submitted in writing. The researcher used closed-ended questionnaires to obtain quantifiable information, and the interview schedule allowed for the collection of qualitative data, which is useful for understanding people's behavior.

3.5.1 Questionnaires

The researcher came up with two sets of questionnaires; one for the principal and another for teachers in charge of ICT. The questionnaire for school principals and teachers in charge of ICT was divided into five areas. Section one needed basic information, while section two was aimed to collect information on the acceptance level of NEMIS, section three was designed to collect information on ICT skills acquisition and data handling while section four and five included information on ICT infrastructure and NEMIS adoption respectively.

The researcher employed a structured closed-ended questionnaire. Close-ended questions, according to Kothari and Pals, enhance consistency of some data between informants (Kothari, 1993). According to Gall (1996), questionnaires are ideal for research projects since they capture information that is not readily observable. The closed-ended questionnaires utilized in this case allowed for data collection of information on the use of ICT facilities in Sub-County secondary schools.

The surveys were less time consuming since most questions were close ended, allowing school principals and teachers in charge of ICT to readily fill in the data. Because the study is concerned with characteristics that cannot be immediately seen, such as respondents' views, opinions, perceptions, and feelings, surveys allow

respondents to express their thoughts or opinions. These were distributed to principals and teachers in charge of ICT (Pages 108 and 111 of Appendix I and II).

3.5.2 Interview Schedule

The researcher devised an interview plan for the Sub-County Education Director. The interview was good for collecting qualitative data which showed human behavior and elaborated on how people concerned with the adoption of the NEMIS felt about this new technology (Appendix III page 114).

A copy of written interview questions was served to the interviewee. The respondent was assured of anonymity and if his or her name would appear in the report, it would be done with his or her approval. The interview provided elaborate answers to the questions and it was upon the interviewer to interpret the information on the interview schedule to extract the data relevant to the study.

3.6 Pilot Study

A pilot study is important in figuring out beforehand problems or issues a researcher may encounter in the actual study. It also facilitates an insight into issues such as validity, reliability, ethics, representation and researcher's health and safety (Catherine, 2001). A pilot study was carried out between 7th and 18th October 2019 in two county and two Sub-County secondary schools in Keiyo South Sub-County in Elgeiyo-Marakwet County. A total of eight respondents responded to the two instruments, questionnaires for Principals and for teachers in charge of ICT. The instruments were found to have acceptable validity and reliability. The pilot study helped to refine the instruments used in the main study by ensuring the language used

in the instruments was appropriate. The time required to complete the instruments was also noted, thus the researcher ensured validity and reliability of research instruments.

The pilot study was crucial since it helped design the data gathering method and was a wonderful way to obtain data about the schools in the Sub-County prior to the actual research. Moreover, it was a way of testing the resources if they would be enough during the research process and this gave a rough estimate of the resources which the researcher needed. It helped determine the time and all costs needed for the actual research, which was important for proper budgeting. It became management estimate on how the researcher involved in the study would collect data, analyze and present it.

3.6.1 Validity

Validity determines if the data obtained is accurate enough to meet the intended objective. It describes to how well a test is used to measure what it is intended to assess (Dane, 1990). The instruments were given to supervisors from the Educational Management and Policy Studies department to help in evaluating the significance of each item in the instrument to the objectives and rate it on the appropriate scale. To determine validity, the content validity index was utilized (CVI).

Validity is the amount to which the study assesses what it aims to analyze, and the researcher applied high level standard academic knowledge throughout the inquiry to maintain validity. These high standards are attained by employing scientific procedures and ideas that reduce mistakes in research. Bias and skewed data are two examples of mistakes that might arise. Thus, the project's validity should be maintained through proper drafting of the research questions, study instructions, selecting the appropriate scale, data collecting processes, statistical analysis, and

reporting. Although any scientific research has flaws, this study attained a 95 percent confidence level, which reflects the respondents' perspectives.

The research in this case met high criteria by employing adequate data gathering methodologies and guaranteeing the validity of the data acquired. The population chosen to represent the entire group was chosen in a proportional manner, eliminating prejudice. Furthermore, the data gathering process provided correct and precise information that represented the entire group. Overall, the research was legitimate and accurate, and it was valuable for gathering information on the implementation of NEMIS registration and the preparation of secondary school principals in Keiyo North Sub-County.

3.6.1.1 Validity Tests

Pilot research was conducted to determine the measuring scales' adequacy and validity. The content validity of the instrument was evaluated, and a content validity index 0.70 or higher was recorded for all variables examined in table 3.2, and all issues raised by professionals' supervisors were resolved in the final tool.

Table 3.2: Content Validity Index (CVI)

Variables	CVI
NEMIS adoption	.871
Acceptance	.794
Skills Acquisition	.960
ICT Infrastructure	.801

3.6.2 Reliability

According to Mugenda (2011), dependability is defined as the degree to which a research instrument generates consistent results following repeated trials. Pilot testing established the dependability of these research tools; reliability lends legitimacy to the research by indicating how well it satisfies a projected prediction. Cronbach's alpha was determined to measure the degree of correlation between scale items. The resulting coefficients of greater than 0.7 are appropriate in social research (Hair, 2015). Thus, coefficients exceeding 0.7 were used in this study, which is acceptable in social research (Saunders, 2014).

3.6.2.1 Reliability Test

The reliability test guarantees that the information gathered through research accurately portrays the situation for the target group under investigation. Credible research is effective in disseminating true facts regarding the readiness of secondary school principals in Keiyo North Sub-County to implement the emerging NEMIS registration.

Reliability test was used to test for the internal consistency of the items that were used to measure variables of interest for this study. According to the tabulated data in Table 3.3, the alpha coefficients for all variables ranged from .803 to .961, putting them over Saunders' proposed threshold of 0.7 (Saunders, 2014). As a result, the scales were trustworthy for measuring the variables.

Table 3.3: Cronbach's alpha Reliability coefficient

Variable	Constructs	No of items	Alpha
Principal's Preparedness	Acceptance Level	10	0.961
	Skills Acquisition	5	0.803
	ICT Infrastructure	7	0.883
Adoption of NEMIS	-	6	0.952

Source: Author's compilation, 2020

3.7 Data Collection

When the instruments were complete, the researcher requested an introduction letter from Moi University school of Education for research permission from the NACOSTI. The permit was utilized to obtain authorization to conduct research in Elgeiyo-Marakwet County from the MoE state department of early learning and basic education, Ministry of interior and coordination of national government, and the County government of Elgeiyo-Marakwet. Data collection was carried out between October 2019 and March 2020.

The questionnaires contained questions which were meant for data collection from respondents. The researcher went out into the field to hand out questionnaires to the respondents. The questionnaires featured questions designed to obtain data from respondents. The surveys were filled out by the respondents in accordance with the instructions provided. Because all the surveys had closed-ended questions, they were essential for gathering ordinal data that would be rated.

The surveys used a continuous rating scale to assess the intensity of emotions and attitudes. It has ranks like unable to answer/strongly disagree/ disagree/ agree/ strongly agree. These ratings allowed the researcher to learn how school principals

and teachers in charge of ICT felt about emerging technologies. Some sections of the questionnaire included questions that were excellent for gathering data on demographic characteristics, all of which are important in the adoption of new technology such as NEMIS. After one hour, the researcher gathered the completed surveys. The researcher conducted an in-person interview with the Sub-County Director of Education.

3.8 Data Analysis Techniques

To facilitate statistical analysis, field responses were cleaned, coded, edited, and typed into the computer. The researcher used Statistical Package for Social Sciences version 25 (SPSS) to analyze the data. The ranks-based replies were categorized and simplified for convenience of analysis. The numeric data from the questionnaire was collected using a 5-point Likert scale, while the qualitative data was collected from the interview schedule.

The results of the analysis were reported using both descriptive and inferential statistical approaches (Cooper, 2016). It was simple to examine quantitative data with closed-ended questions since respondents provided explicit replies. However, data from the interview schedule that revealed unobserved human behavior required further interpretation.

To determine the key features of the research variables, descriptive statistics were utilized. Descriptive statistics are important because they summarize the data and measures of relationship. Following that, data was presented using percentage frequencies tables and figures (Hair, 2015). It was simple to evaluate the responses with ordinal answers since respondents provided data in an ordered manner that could

be simply displayed during analysis. The data was then organized into tables using a statistical approach appropriate for the investigation.

The data gathered from the interview schedules with the Sub-County Director of Education, on the other hand, was examined using content analysis approach. The content analyzed highlighted the key aspects from the interview that were significant to the study.

Before doing inferential statistical analysis with multivariate approaches, regression assumptions were made. Because this study proposes to use multiple regressions, multi-collinearity was examined using correlation, tolerance, and variance inflation values (Hair, 2015), with a variance inflation factor of less than 10 being used as a baseline.

Models were built using regression analysis to describe the connections between and among the variables assessed. The information was valuable in the study since regression analysis took into account all of the mistakes that may have happened throughout the investigation. The final data was therefore modified and tweaked to provide a genuine depiction of the degree of preparation of secondary school Principals in Keiyo North Sub-County for adoption of NEMIS implementation. The model was a direct impact model that captured the relationship between the level of preparation of the Principal and NEMIS adoption. The model looked like this:

$$Y = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \epsilon$$

Where:

Y = Adoption of NEMIS

X₁ = Acceptance

X_2 = ICT Skills Acquisition

X_3 =ICT Infrastructure

β_0 = Slope Constant

β_1, β_3 = Regression Coefficients

ε =Error Term

3.9 Ethical Considerations

Respondents were made aware that the purpose of the study was purely academic. They were not pressured into participating in the study and their participation was entirely voluntary. They were also informed that they may opt out of the study or leave any questions they did not wish to answer blank. They were also assured that data collected from them would be confidentially kept and only used for purposes not other than those stated. The Sub-County director was also informed of the same.

Moreover, the researcher observed the respect of privacy as he let the respondents to choose the appropriate time when they could answer the questionnaires. The invasion of privacy can lead to infringement of personal information such as opinions, attitudes and beliefs. Respect of privacy involves respecting a person's marital status, income, age and other intimate details.

Before commencement of the actual research, permission was sought from NACOSTI, Moi University, County Director of Education Elgeiyo-Marakwet, County Commissioner Elgeiyo-Marakwet and the County Secretary Elgeiyo-Marakwet County. (See Appendix V, VI, VII, VIII and IX pages 116 to 120).

CHAPTER FOUR

DATA ANALYSIS, PRESENTATION, INTERPRETATION AND DISCUSSION

4.1 Introduction

This chapter covers the key findings from the questionnaire data analysis. The study findings are then tabulated using a variety of descriptive and inferential statistics to emphasize the important aspects of the data. Finally, the theories are put to the test, and the results are clearly documented.

4.2 Response Level

Despite the researcher's intention to collect data from 61 respondents, only 48 completed and returned their field surveys giving a response rate of above 80%. In addition, one Sub-County Director of Education was interviewed. This response rate is satisfactory in comparison to the needed rate of more than 70%. An excellent study should have a limited or non-existent margin of error.

4.3 Demographic Profile of Respondents

The demographic characteristics of the respondents were surveyed in the study, which comprised age, gender, and education, as shown in Table 4.1. According to the gender breakdown of the respondents, majority were males representing 70.8%. This revealed that males make up the majority of secondary school administrators in the Sub County. In terms of age, majority of the respondents were in the age of 31 to 40 years while few (6.3%) were below the age of 30 years. (77.1%) had undergraduate level of education while (22.9%) had postgraduate qualification.

Table 4.1: Demographic characteristics of the respondents

Demographic characteristics	Category	Frequency (f)	Percentage (%)
Gender	Female	14	29.2
	Male	34	70.8
	Total	48	100.0
Age	< 30 years	3	6.3
	Above 30 and below 40 years	8	16.7
	above 40 and below 50 years	27	56.2
	Above 50 years	10	20.8
	Total	48	100.0
Education	Postgraduate	11	22.9
	Degree	37	77.1
	Diploma	0	0.0
	Total	48	100

Source: Author's compilation, 2020

4.4 Descriptive Statistics of Variables

4.4.1 Principal's Acceptance of NEMIS

The findings indicate that Principal's acceptance means ranged from 2.10 to 2.56. This resulted in an overall mean of 2.43. The ratings were somewhat below average on a 5-point Likert scale. The standard deviations (SD) ranged from 1.08 to 1.37. The total SD for Principal's acceptance mean was 1.10, implying that 99.90% of the given responses were within the general mean.

The comparatively low SD number shows that the dispersion of the scores was generally stable. The items assessing the integrated approach had minimal standard errors of the mean, indicating that the mean values were dependable.

The response was the highest (2.56) in the aspect of ‘NEMIS contain all parent’s information’ (A6). The item ‘My organization has an operational internal NEMIS’ (A1) item had the lowest mean of 2.10 which proves that most secondary schools in Keiyo North Sub-County do not have a functional internal NEMIS. The slightly below average mean of 2.43 on level of acceptance is proven from the literature review when the Kenyan Cabinet Secretary for education admitted that her ministry did not have an accurate and reliable database on the actual number of schools and students that can be relied on for decision making (Wanzala, 2019).

A report submitted to the National Assembly in early 2019 showed that the system had captured only information on half of learners in public schools. The study has almost similar results as the Principals of secondary schools and teachers in charge of ICT indicated difficulty registering the students on the online platform through NEMIS. According to the report presented by the Principal Secretary, only 6.8 million learners out of a possible 13 million had been captured (Wanzala, 2019)

Table 4.2: Principal's Acceptance of NEMIS

Code		Mean		
		Stat	SE	SD
A1	My organization has an operational internal NEMIS.	2.10	0.19	1.37
A2	It is simple to upload educational data to the NEMIS platform.	2.47	0.18	1.30
A3	Using NEMIS improves managerial efficiency.	2.43	0.16	1.16
A4	NEMIS has increased student admissions.	2.52	0.19	1.36
A5	NEMIS has made student admittance more equitable.	2.43	0.16	1.16
A6	NEMIS contains all students' parent information.	2.56	0.19	1.31
A7	The NEMIS interface is updated with student data.	2.39	0.15	1.08
A8	NEMIS employs simple techniques.	2.51	0.19	1.33
A9	I upload data to the NEMIS site on my own.	2.39	0.19	1.36
A10	The use of the NEMIS has allowed for rapid data access.	2.47	0.19	1.33

Source: Author's compilation, 2020

4.4.2 ICT Skills Acquisition

The mean as a measure of central tendency for the items assessing the variable training and competence was found to be in the range 2.16 to 2.87. The total mean for the variable training and skill was 2.52 on a 5-point Likert scale. This indicated that the respondents performed somewhat better than average. ICT skills Acquisition and competence SD varied from 1.27 to 1.42, with an average SD of 1.00.

The rather high SD value indicates that the score dispersion was quite varied. The standard error of the mean findings was minimal, indicating that the mean values for the items were reliable. According to an evaluation of the scores for each item measuring ICT skills acquisition and ability, respondents fared best in the item 'My

organization invests in capacity development' (TS4), which had a mean value of 2.87 and SD of 1.42. In contrast, the item 'My data training is appropriate for use in NEMIS' (TS1) had the lowest mean of 2.16 and SD of 1.27.

This is a similar scenario to the research conducted by Muhia (2016) which discovered that the Sub-County Education Office employees had appropriate computer literacy abilities; however, the abilities of School heads were inadequate, necessitating the need for in-service training. The majority of the schools lacked enough facilities or qualified employees to handle student registration on NEMIS, which is consistent with Juma's (2011) research in Kisumu County, Kenya, which identified a stumbling block as a shortage of technical personnel in the ICT implementation plan. Table 4.3 shows the descriptive data for Principal of schools and teachers in charge of ICT skills acquisition.

Table 4.3: ICT Skills Acquisition

Code	Questions	Mean		
		Stat	SE	SD
TS1	My data training is suitable for usage in NEMIS.	2.16	0.18	1.27
TS2	I routinely attend data handling in-service training.	2.43	0.18	1.28
TS3	Board of Management Supports training on data.	2.77	0.19	1.35
TS4	My organization invests on capacity development.	2.87	0.20	1.42
TS5	Data management skills improve on NEMIS use.	2.35	0.20	1.39

Source: Author's compilation, 2020

4.4.3 Availability of ICT Infrastructure

An assessment of availability of ICT infrastructure was carried out by the researcher through the use of a checklist (Appendix XI page 122). All items measuring ICT

infrastructure were subjected to a frequency analysis of measures of central tendency and measures of dispersion. The item averages varied from 2.08 to 3.04, while the SD ranged from 1.16 to 1.48. The overall mean and SD for the variable ICT infrastructure were 2.40 and 1.02, respectively.

The low SD score suggests that there is little variation in ICT infrastructure responses. The low mean SE suggested that the mean was reliable. The item 'Access to the NEMIS portal within the school is swift' (IT4) had the highest mean value of 3.04 and the greatest SD of 1.48. While the item, 'There are no technological issues when using NEMIS' (IT7), received the lowest score of 2.08 with SD of 1.23. This was proved when the then Kenyan Cabinet Secretary in charge of the MoE indicated that most secondary schools continue to struggle with internet connectivity, owing to the fact that most secondary schools are located in remote, inaccessible areas.

The Cabinet Secretary stated that sluggish internet access in several Counties hampered the uploading of NEMIS data because remote locations reported downtime and slow connection. The similar problem can be found in Keiyo North Sub-County, where sluggish internet access has hampered the timely submission of pupils' information to the NEMIS site. The item IT6 had a substantially below average mean of 2.33 and SD of 1.35, indicating that uploading data on the NEMIS portal takes a lengthy time, which might have a negative influence on NEMIS adoption. The outcomes for internet access and timely uploading of student information to NEMIS are as follows.

Table 4.4: ICT Infrastructure on NEMIS

Code		Mean		
		Stat	SE	SD
IT1	My school has a sufficient number of computers for usage in NEMIS.	2.10	0.19	1.37
IT2	For NEMIS usage, we have sophisticated PCs.	2.47	0.18	1.30
IT3	Data retrieval with NEMIS is quick	2.43	0.16	1.16
IT4	The school's access to the NEMIS portal is quick.	3.04	0.21	1.48
IT5	It's when I am in school, I access NEMIS	2.37	0.18	1.24
IT6	Uploading data to the NEMIS interface is quick.	2.33	0.19	1.35
IT7	When utilizing NEMIS, there are no technological obstacles.	2.08	0.17	1.23

Source: Author's compilation, 2020

4.4.4 Adoption of NEMIS

The mean values and standard deviations of all six NEMIS adoption items varied from 2.10 to 2.52, respectively. According to the research, the overall mean for the NEMIS adoption items was 2.40. The SD, which reflects how widely the scores vary, was 1.15. This suggested a moderate dispersion of results when NEMIS adoption as a variable was measured. Because the SE were minimal, it was determined that the mean values derived for all items and the overall mean were trustworthy. The mean values SD ranged from 2.10 to 2.52 and 1.16 to 1.37, respectively. The investigation also revealed that the overall mean for the NEMIS adoption items was 2.40. The SD, which measures the dispersion of the scores, was 1.15. This suggested a moderate dispersion of results when NEMIS adoption as a variable was measured. Because the SD were minimal, it was determined that the mean values derived for all items and the

overall mean were trustworthy. This concurs with the study carried out by Juma (2011) in Kisumu County, where it was established that ICT has been inadequately adopted.

Table 4.5: NEMIS adoption

Code		Mean		
		Stat	SE	SD
AD1	In NEMIS, student data is easily accessible.	2.10	0.19	1.37
AD2	NEMIS is a student data one-stop shop.	2.47	0.18	1.30
AD3	All essential student information is submitted to NEMIS.	2.43	0.16	1.16
AD4	NEMIS has enabled us efficiently handle student data.	2.52	0.19	1.36
AD5	The school has faith in the NEMIS system.	2.43	0.16	1.16
AD6	NEMIS data can efficiently be retrieved	2.47	0.18	1.30

Source: Author's compilation, 2020

On interviewing the Sub-County Director of education on the question of whether Principals in the Sub-County use NEMIS, this is what he said;

“Yes, NEMIS had been adopted although not fully because some secondary schools had not fully uploaded students data onto the portal”

This is observed from the descriptive statistics on NEMIS adoption which has an overall mean of 2.40 which is below average, which can be interpreted to mean that NEMIS has not been fully adopted.

On whether Principals seek assistance when using NEMIS to submit education data, the Sub-County Director of education said;

“A number of Principals seek assistance when submitting data onto the NEMIS portal, others get assistance from Cyber Cafés in urban areas”

This is supported by the slightly above overall mean of 2.52 on descriptive statistics on Acquisition of skills which is interpreted to mean that Principals’ skills are not adequate for use in NEMIS.

The Sub-County Director of education noted that; the main challenge when using NEMIS in secondary schools was lack of internet in most secondary schools specifically those located in the rural parts of the Sub-County. It was noted by the Sub-County Director of education that:

“ICT Infrastructure is not adequate in most secondary schools especially the Sub-County schools in the Sub-County”

This concurs with the below average mean of 2.40 descriptive statistics on ICT infrastructure.

The Sub-County Director of education had the view that; in order to improve NEMIS adoption, Principals need to be trained on its use and secondary schools need to be equipped with supporting ICT infrastructure that supports use of NEMIS.

Additionally, the slow student data uploads could be due to the principal’s attitude on new emerging technology and there was need for mobilization of behavior change.

4.5 Test of Regression Assumptions

The OLS were met in the study which indicates that the study was conducted well, and the result does not deviate from the norm. Thus, the data collected from the study were reliable and represented the true situation on the ground, and would be useful for the study.

4.5.1 Test of Normality

The majority of statistical (inferential) procedures need the normalcy assumption to be met (Field, 2005). Normal data is symmetrical, bell-shaped, and has the greatest frequency of scores in the middle and a smaller distribution towards the extreme ends. The values of skewness and kurtosis can be used to test for normality. While skewness refers to symmetry, kurtosis describes how peaks or flat the data is (Barbara, 2007). The data skewness and kurtosis statistics ranged from 0.58 to 0.97 and from 0.88 to 0.58 respectively as summarized in table 4.6. The required range for properly distributed data, according to (Hair, 2015), is between -1.00 and +1.00.

Table 4.6: Normality Test

Variable	Mean	SD	Skewness		Kurtosis	
	Statistic	Statistic	Statistic	Std. Error	Statistic	Std. Error
Acceptance level	2.43	1.10	0.97	0.34	-0.69	0.67
ICT Skills Acquisition	2.52	1.00	0.58	0.34	-0.58	0.67
Adoption	2.40	1.15	0.86	0.34	-0.88	0.67
ICT Infrastructure	2.40	1.02	0.78	0.34	-0.75	0.67

Source: Author's compilation, 2020

The Kolmogorov-Smirnov test was also used to evaluate the normality of the variable distribution. The test compares sample scores to a normally distributed set of scores with the same mean and SD, and if the test is non-significant ($p > 0.05$), the sample distribution is not different statistically from the normal distribution. The acceptability level, ICT skills acquisition, ICT infrastructure, and NEMIS adoption were not significant ($p > 0.05$), suggesting that the variables are normally distributed. The fact

that the data on the primary variables did not depart significantly from the normal distribution might be construed to mean that they are safe to utilize.

Table 4.7: One-Sample Kolmogorov-Smirnov Test Results

		Acceptance level	ICT Skills Acquisition	NEMIS Adoption	ICT Infrastructure
N		48	48	48	48
Normal Parameters	Mean	2.43	2.52	2.40	2.40
	Std. Deviation	1.10	1.00	1.15	1.02
Most Extreme Differences	Absolute Positive Negative	0.23 0.23 -0.15	0.15 0.15 -0.06	0.27 0.27 -0.14	0.22 0.22 -0.11
	Kolmogorov-Smirnov Z	1.62	1.08	1.87	1.55
	Asymp. Sig. (2-tailed)	0.08	0.19	0.07	0.09

Source: Author's compilation, 2020

4.5.2 Multi Collinearity statistics

Collinearity occurs when two or more of a regression model's independent or explanatory variables have a linear connection. This complicates the interpretation of the regression results. The occurrence of strong correlations above 0.95 indicates significant collinearity. The study's findings corroborate the hypothesis on the level of readiness and acceptance of NEMIS by secondary school principals in Keiyo North Sub-County. Second, collinearity may be caused by the interaction of two or more additional independent variables. Variance Inflation Factors were used to measure multi-collinearity (VIF). Field recommends a VIF of 10 as a cutoff (Field, 2005). The VIF values for variables acceptability level, ICT skills Acquisition, as well as ICT infrastructure vary from 4.31 to 8.78 and are below than the stated threshold, indicating absence of multi-collinearity. The results are presented in Table 4.8.

Table 4.8: Collinearity Statistic for variables

Variable	Collinearity Statistics	
	Tolerance	VIF
Acceptance	0.11	8.78
ICT Skills Acquisition	0.23	4.31
ICT Infrastructure	0.17	5.86

Source: Author's compilation, 2020

4.6 Correlation Analysis of Study Variables

To investigate the association between the variables, Pearson correlation analysis was utilized (Wong, 2005). Table 4.9 summarizes the findings. All of the related pairs of variables were statistically significant at level $p < 0.01$. The acceptability level of the principal and the adoption of NEMIS revealed a strong positive association ($r = .959$, $p < 0.01$). ICT skills Acquisition were considerably and positively connected with NEMIS adoption ($r = .880$, $p < 0.01$), whereas ICT infrastructure was significantly and positively correlated with NEMIS adoption ($r = .919$, $p < 0.01$). This signifies that no variables were eliminated from the subsequent regression analysis.

Table 4.9: Correlation Coefficients

	Adoption	Acceptance	ICT Skills Acquisition	ICT Infrastructure
Adoption	1.00			
Acceptance	0.95**	1.00		
ICT Skills Acquisition	0.88**	0.87**	1.00	
ICT Infrastructure	0.91**	0.91**	0.80**	1.00

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

4.7 Regression Results

The study's goal was to investigate the impact of principal's level of readiness on NEMIS adoption in secondary schools in Keiyo North. The independent factors and their direct effect on NEMIS adoption were the focus of this portion of the study.

The F-statistic indicated that the model was strong enough to describe the association between the variables ($F=221.16$, $p<0.05$). The H_{01} indicated that the principal's acceptance level had no statistically significant influence on NEMIS adoption in secondary schools. The regression analysis findings indicated that the principal's approval level had a positive and significant influence on NEMIS adoption ($\beta =0.60$, $p<0.05$) thus the null hypothesis was not supported. According to the findings, as the degree of Principal acceptance increases, so will NEMIS adoption.

According to H_{02} , ICT skills Acquisition have no statistically significant influence on NEMIS adoption in secondary schools. According to the regression results, they had a substantial positive influence on NEMIS adoption ($\beta =0.18$, $p<0.05$) resulting to rejecting the H_{02} and establishing that improving ICT skills Acquisition results to, improved NEMIS adoption. The third H_{03} stated that there is no statistically significant influence of ICT infrastructure on NEMIS adoption in secondary schools. According to the findings, ICT infrastructure had a substantial and positive influence on NEMIS adoption ($\beta =0.29$, $p<0.05$) indicating that ICT infrastructure promotes NEMIS adoption laying a base that building a functional NEMIS necessitates well-trained human resources, adequate internet connectivity, positive attitude toward NEMIS, and dedication from those in power as highlighted by Trucano, (2006) as portrayed in table 4.10.

Table 4.10: Multiple Regression Results

	Likelihood of OVCs
Constant	-0.22(0.121)
Acceptance	0.60(0.11) *
Training and Skills	0.18(0.08) *
ICT infrastructure	0.29(0.10) *
F-Statistic	221.16
R	0.96
R ²	0.93
Adj. R ²	0.93
Durbin-Watson	1.932

*Values of standardized regression coefficients are shown with SE in parenthesis, and *p 0.05 indicates that the value is significant at 95%.*

The coefficient of determination value of R²=0.93 indicates that acceptability level, ICT skills Acquisition, and ICT infrastructure can explain 93.8 percent of the variation in NEMIS adoption.

As a consequence of the data in Table 4.10, the following model was developed:

$$Y = -0.22 + 0.60X_1 + 0.18X_2 + 0.29X_3$$

Where:

Y = Adoption of NEMIS

X₁ = Acceptance Level

X₂ = ICT Skills Acquisition.

X₃ = ICT infrastructure

The model indicates a positive relationship between the dependent variable, NEMIS adoption, and the independent variables. Adoption of NEMIS will be more rapid if principals' acceptance, ICT skills, and talents are high, and secondary schools have enough ICT infrastructures. Adoption of NEMIS, on the other hand, will be delayed if the independent variables are low. Because of the magnitude of the independent variables, NEMIS adoption in Keiyo North Sub- County is low in this scenario. It is

also worth noting that the acceptability level and NEMIS adoption have a stronger association than the other factors. As a result, acceptance level is highly significant in deciding NEMIS adoption, and in order for NEMIS to be accepted faster, Principals' degree of acceptance must be enhanced. This can be accomplished by a shift in mindset. The hypotheses' outcomes are reported in Table 4.11 below (H_{01} , H_{02} and H_{03})

Table 4.11: Summary of the Hypotheses Tests Results

Statements	Results
H₀₁: There is no statistically significant influence of acceptance level on NEMIS adoption in secondary schools in Keiyo North, Kenya.	Rejected H_0
H₀₂: There is no statistically significant influence of ICT skills Acquisition on NEMIS adoption in secondary schools in Keiyo North, Kenya.	Rejected H_0
H₀₃: There is no statistically significant influence of ICT infrastructure on NEMIS adoption in secondary schools in Keiyo North, Kenya.	Rejected H_0

Source: Author's compilation, 2020

CHAPTER FIVE

SUMMARY OF THE FINDINGS, CONCLUSION AND RECOMMENDATIONS

5.1 Introduction

This chapter gives the research results discussed in the preceding chapter, a conclusion formed from the description of the findings, and suggestions based on the conclusion. The study's conclusion is based on the findings of hypothesis testing. Recommendations on the research's consequences for theory, managerial practice and policy, as well as future research directions, are presented. As a result, the chapter is divided into the following sections: Findings, conclusion, and suggestions.

5.2 Findings

The study attempted to determine the impact of principal preparation and NEMIS adoption in secondary schools in Keiyo North Sub-County. It employed a concurrent triangulation method with a mixed approach strategy that included both quantitative and qualitative components. The intended audience included teachers in charge of the ICT and secondary school principals, as well as the Sub-County Director of Education. In all, 60 questionnaires were issued to respondents, 48 of which were completed and returned, with one interview scheduled for the Sub-County Director of Education. This resulted in an 80 percent response rate. To summarize the data and derive important findings, descriptive statistics were employed. The correlation and multiple regression inferential statistics were used to demonstrate a link between the level of preparation of principals and the adoption of NEMIS in secondary schools in Keiyo North Sub-County.

Multiple regression analyses, driven by the objectives and hypotheses, revealed that the principal's degree of acceptance, ICT skills acquisition, and ICT infrastructure all had a positive and substantial influence on NEMIS adoption. The coefficient of determination ($R^2 = 0.93$) revealed that acceptability, ICT skills acquisition, and ICT infrastructure may explain 93.8 percent of NEMIS adoption. This demonstrates that an EMIS requires technical infrastructure in order to function properly (Muhia, 2016). It also necessitates the use of individuals with the necessary abilities and attitudes, as well as the proper processes.

According to the research findings, Principals have not completely embraced the usage of NEMIS since some of them have not uploaded NEMIS data onto the portal while others have done so halfway with the support from cyber café's people as was indicated by the Sub-County Director of Education in the interview. Most principals have not been taught on NEMIS-related technology, and they lack the necessary knowledge and abilities on how to utilize NEMIS in uploading the relevant data, which may be one of the reasons why some of them sought assistance in utilizing NEMIS. It was also highlighted that the majority of learning institutions, do not have enough ICT infrastructure to enable the usage of NEMIS.

Another issue which impacted on the adoption of NEMIS was the secondary school Principals' attitude towards NEMIS adoption. Thus, there is need for Principal training on skills about importance of the NEMIS registration and its impact on resource distribution in secondary school in the country.

Training on ICT skills acquisition is important in the degree of preparation of secondary school principals and the implementation of a NEMIS in Keiyo North Sub-

County. The principals who had adequate ICT skills had a change of mind on using technology to register the students while those who had not been trained had issues with the adoption of NEMIS. Adoption of NEMIS might take some time and effort is required by secondary school principals and teachers in charge of ICT to take into consideration the efficiency from the training to acquire necessary ICT skills required for registration of students onto the NEMIS portal.

Another issue that came out clear is the minimal training on ICT skills within the management levels in schools. For instance, the managers are a bit older generation teachers who did not receive ICT training in college as can be noticed from the relatively low mean of 2.52 on ICT skills acquisition from the descriptive statistics. Catching up with new information and obtaining new knowledge might take some time and this would slow down the adoption of NEMIS. However, most universities are offering educational courses which are inclusive with ICT skills. The situation might improve in future as young teachers continue joining the teaching profession, but at the moment teachers require training on attitude change on the importance of NEMIS.

Parents play a key role in NEMIS registration of students as they provide proper documentation and in good time. School managers therefore need to work closely with parents for smooth NEMIS registration of students. It is possible for parents to slow down the registration process through untimely data provision and late provision of birth certificate. Moreover, the registrar of births might have slowed the registration of students which still impacted the speed of student registration on NEMIS portal.

Further-more, secondary schools in the rural parts of Keiyo North Sub- County had issues with internet connection. Internet connection impacted the speed of registration. The Sub- County Director of Education in an interview conducted observed that most Principals who had issues with internet experienced partial NEMIS registration. Poor internet connection impacts the speed of registration, and when a school has extended periods of lack of internet connection, it would take time to fully register the students on the NEMIS portal.

Additionally, some school principals did not upload the needed information about their students on the NEMIS website, while some few gave exaggerated information on students' enrolment (Wanzala, 2019). The information given impacted on the distribution of resources and this further impacted negatively on the quality of education for students distributed all over the county. Schools which had exaggerated number of students might receive excess government funds which may lead to wastage of resources. On-the-other hand, schools which had not completed the registration process would have little funds in their account leading to lack of resources to finance their activities.

Secondary school Principals' level of preparedness and adoption of NEMIS in Keiyo North Sub-County is a concept closely related to sustainable education system. The work indicates how the education system prepares the students to cope with the real world. NEMIS promotes better distribution of resources and the Principals should be truthful with the information they offer through NEMIS platform. Sustainable education systems should help students become responsible members of the society who can work on poverty eradication.

5.3 Conclusion

The findings of this study led to a variety of conclusions. First, the correlation results show that the components of Principal's degree of readiness are positively and strongly connected with NEMIS adoption. As a result, it was found out that as acceptability, ICT skill acquisition and ICT infrastructure improve, NEMIS usage by secondary school principals.

Acceptance had a statistically significant influence on NEMIS adoption in secondary schools in Keiyo North Sub-County, according to the regression findings for testing the first hypothesis. From the study, it could be concluded that in order for NEMIS adoption to succeed, principals must be willing to embrace it. It was observed that the higher the level of acceptability, the larger the adoption of NEMIS. The incomplete registration of pupils in Keiyo North Sub-County was ascribed to secondary school principals' lack of readiness for NEMIS implementation.

Taking the second goal of the study, research established that ICT skills acquisition had a significant positive influence on NEMIS adoption in secondary schools in Keiyo North Sub-County. As a result, it was established that training Principals on NEMIS-related technologies and providing them with the requisite skills will definitely help and boost the adoption of NEMIS in the schools under review.

Furthermore, in line with the third goal set in chapter one, the third hypothesis investigated demonstrated a statistically significant and favorable effect of ICT infrastructure on NEMIS adoption in secondary schools in Keiyo North Sub-County. As a result of having the requisite ICT infrastructure in schools, the use of NEMIS grew.

5.4 Recommendations

Several recommendations for managerial practice, policy as well as for further research are taken from the study's findings. First, Principals of secondary schools had a duty to ensure a smooth registration of students, staff and other school resources onto the NEMIS portal, and they should embrace ICT technology in their schools. For this to happen they might need further education on the importance of student registration for equal distribution of resource in the education system.

Further-more, principals in Keiyo North Sub-County secondary schools needed the appropriate training on handling the NEMIS technology as it could increase the speedy registration of student. Lack of knowledge was slowing down the registration, and the ministry of education should have put forward ways to train the principals.

Since some schools in the rural areas of the Sub-County had issues with internet access, the ministry should work with the government to provide adequate internet to all parts of the country. Internet providers can work side by side with the education ministry to provide necessary services to secondary schools. The speed of internet affects the rate of student, staff and school resources registration on the NEMIS portal leading to slow uploading of the needed information.

None-the-less, the government has been keen on last mile electricity connection to all rural schools both primary and secondary, although these efforts have been fruitful in some parts of the country, some schools still lack internet connection. The school principals should petition for internet connection to the school environment as internet access is key in aiding ICT technology like NEMIS.

Even with the slow internet connection, the school heads should avoid registering the students in the public cyber facilities (as reported by the Keiyo North Sub-County Director of Education in an interview) as it poses danger to the NEMIS program. It undermines the security of the program and might lead to stolen identities and cyber pulling which affects the students directly and the ministry.

The ministry should work on bringing uniformity for the schools in the rural areas as well as those in the urban region. For instance, schools in rural parts of Keiyo North Sub- County are easily prone to lack of internet for quick NEMIS registration and this impacts negatively on the whole exercise. The schools in the urban areas (for instance St. Patrick's Iten) easily access internet facilities compared to those in the rural parts of Keiyo North Sub-Country and the ministry should develop ways to combat the differences.

Equally, parents are a crucial part of the registration process and therefore parent-teacher associations should be keen on informing parents about the importance of student registration on NEMIS for resource allocation within the Sub-County and that the UPI number given to students can be used to seek medical services in hospitals. Timely presentation of student data can improve the speed of NEMIS registration, and parents should provide the right documentation which makes shift from the analog registration to digital registration smooth.

Student registration through NEMIS, which is a function of the Ministry of Education, should promote fairness in resource allocation within the secondary school system. The ministry allocates resources based on the information provided by the school

principals and therefore principals should make sure they capture students' enrolment data through NEMIS portal.

5.4.1 Theoretical and Practical Implications

The current investigation has theoretical as well as practical ramifications. Managers will also discover some pertinent implications that may be used in developing strategies for effective NEMIS adoption. This section discusses the theoretical and practical consequences.

5.4.1.1 Theoretical Implications

This study provided empirical evidence for expanding the present body of knowledge in the fields of NEMIS technology adoption in student data management. The assumptions of the Unified Theory of Acceptance and Use of Technology and the public choice theory have been empirically confirmed.

The study's discovery that technology use is a function of user acceptability is compatible with the UTAUT theory postulates that guided the inquiry. It is thus proposed that educational managers pay more attention to the postulates of UTAUT theory in order to effectively execute ICT-driven initiatives such as NEMIS. They should also allocate resources to areas of necessity fairly rather than being driven by their self-interests, as stated in public choice theory.

With proper and accurate NEMIS data, it makes it possible for the education ministry to allocate education resources fairly and effectively throughout the education system. Better student representation data makes resource mapping easy which improves the learning outcomes.

5.4.1.2 Management Practice and Policy Implications

This section draws and documents many recommendations for management practice, policymakers, the Ministry of Education, and researchers based on the study's findings. The degree of preparedness and acceptance of NEMIS by principals in Keiyo North Sub-County might be utilized as a foundation study for teacher training in other regions of the country.

According to the findings of this study, the level of preparedness of principals is critical in the implementation of NEMIS. To achieve the desired compounding influence on NEMIS adoption in schools, a three-pronged strategy of having Principals who are ready to embrace NEMIS, have the right NEMIS skills and abilities, and are supported by the requisite ICT infrastructure should be implemented. As a result, policies must be in place to train school administrators in NEMIS-related technologies and to provide secondary schools with NEMIS-compatible ICT infrastructure.

5.5 Areas for Further Research

This study was carried out to investigate the relationship of Principals' level of preparedness and adoption of NEMIS. The following areas of concern can be considered for further research:

- i. The moderating effect of Board of Management support on the connection between principals' degree of preparation towards NEMIS adoption requires more investigation.

- ii. Research on the mediating or moderating influence of the principal's age and gender on the link between Principals' degree of readiness and NEMIS adoption is required.
- iii. Future research might apply the same core ideas, but with a longitudinal rather than a cross-sectional approach. Changes in data relative to time would need to be corrected in the longitudinal research. Future studies should capture issues such as efficiency of resource allocation due to effective NEMIS registration and how it impacts on student's lives after completing secondary school education.

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APPENDICES

Appendix I: Questionnaire for Principals of Secondary Schools

This questionnaire is meant to investigate on the preparedness of secondary school principals and teachers in charge of ICT in adoption of National Education Management Information System (NEMIS) in decision making for resource allocation in Keiyo North Sub-County Elgeyo-Marakwet County. It is part of my research work at Moi University. Kindly respond to all questions in the spaces provided with sincerity and accuracy. Be assured that the information given shall be treated with confidentiality. Do not write your name on the questionnaire. Fill and tick where appropriate.

Section A: General Information

Please you are required to simply indicate by a tick (✓) in the preference box below

1. Type of the school: National [] Extra-County [] County [] Sub-County []
2. Gender of the respondent: Male [] Female []
3. Kindly indicate your age bracket: Less than 30[] 31-40[] 41-50[]
Above 50 []
4. Indicate your Level of Education Postgraduate: [] Undergraduate [] Diploma []

Section B: Level of Acceptance on Use of National Education Management Information System (NEMIS)

Please use the key below to indicate your feeling and opinion by a tick (√) using the key: Strongly Agree (SA) 5, Agree (A) 4, Undecided (U) 3, Disagree (D) 2, Strongly Disagree (SDA) 1

Statement		SA	A	U	D	SDA
		5	4	3	2	1
A1	My institution has a functional internal NEMIS					
A2	Uploading education data to NEMIS portal is easy					
A3	Using NEMIS enhances efficiency in management					
A4	NEMIS has enhanced admission and transfer of students					
A5	NEMIS has created fairness in admission of students					
A6	All information on students' parent is uploaded in the NEMIS					
A7	Data on students is updated on the NEMIS portal					
A8	NEMIS uses easy procedures					
A9	I upload data in NEMIS portal without assistance.					
A10	Use of NEMIS has enabled quick access of data					

Section C. ICT Skill Acquisition

Statement		SA	A	U	DA	SDA
		5	4	3	2	1
TS1	My training on data is adequate for use in NEMIS					
TS2	I regularly attend in-service training on data handling					
TS3	The Board of Management supports training on data					
TS4	My institution invests in capacity building					

TS5	Acquisition of skills on data management improves the use of NEMIS					
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Section C: ICT Infrastructure and Use

Statement		SA	A	U	DA	SDA
		5	4	3	2	1
IT1	My school has adequate computers for NEMIS use.					
IT2	For NEMIS, we have sophisticated computers.					
IT3	Data retrieval with NEMIS is quick.					
IT4	I always input NEMIS data within the school					
IT5	It's when I am in school, I access NEMIS					
IT6	Access to the NEMIS interface is quick.					
IT7	When utilizing NEMIS, there are no technological obstacles.					

Section D: Adoption of NEMIS

Statement		SA	A	U	DA	SDA
		5	4	3	2	1
AD1	In NEMIS, student data is easily accessible.					
AD2	NEMIS is a one-stop shop for student data. All essential student information is submitted to NEMIS.					
AD3	NEMIS has allowed us to handle student data more efficiently.					
AD4	The school has faith in the NEMIS system.					
AD5	Data retrieval using NEMIS is quick.					
AD6	In NEMIS, student data is easily accessible.					

Appendix II: Questionnaire for Teachers In Charge of ICT

This questionnaire is meant to investigate on the preparedness of secondary school principals and teachers in charge of ICT in adoption of National Education Management Information System (NEMIS) in decision making for resource allocation in Keiyo North Sub-County Elgeyo-Marakwet County. It is part of my research work at Moi University. Kindly respond to all questions in the spaces provided with sincerity and accuracy. Be assured that the information given shall be treated with confidentiality. Do not write your name on the questionnaire. Fill and tick where appropriate.

Section A: General Information

Please you are required to simply indicate by a tick (✓) in the preference box below

5. Type of the school: National [] Extra-County [] County [] Sub-County []
6. Gender of the respondent: Male [] Female []
7. Kindly indicate your age bracket: Less than 30[] 31-40[] 41-50[]
Above 50 []
8. Indicate your Level of Education Postgraduate: [] Undergraduate [] Diploma []

Section B: Level of Acceptance on Use of National Education Management Information System (NEMIS)

Please use the key below to indicate your feeling and opinion by a tick (√) using the key: Strongly Agree (SA) 5, Agree (A) 4, Undecided (U) 3, Disagree (D) 2, Strongly Disagree (SDA) 1

Statement		SA	A	U	D	SDA
		5	4	3	2	1
A1	My institution has a functional internal NEMIS					
A2	Uploading education data to NEMIS portal is easy					
A3	Using NEMIS enhances efficiency in management					
A4	NEMIS has enhanced admission and transfer of students					
A5	NEMIS has created fairness in admission of students					
A6	All information on students' parent is uploaded in the NEMIS					
A7	Data on students is updated on the NEMIS portal					
A8	NEMIS uses easy procedures					
A9	I upload data in NEMIS portal without assistance.					
A10	Use of NEMIS has enabled quick access of data					

Section C. ICT Skill Acquisition

Statement		SA	A	U	DA	SDA
		5	4	3	2	1
TS1	My training on data is adequate for use in NEMIS					
TS2	I regularly attend in-service training on data handling					
TS3	The Board of Management supports training on data					

TS4	My institution invests in capacity building					
TS5	Acquisition of skills on data management improves the use of NEMIS					

Section C: ICT Infrastructure and Use

Statement		SA	A	U	DA	SDA
		5	4	3	2	1
IT1	My school has adequate computers for NEMIS use.					
IT2	For NEMIS, we have sophisticated computers.					
IT3	Data retrieval with NEMIS is quick.					
IT4	I always input NEMIS data within the school					
IT5	It's when I am in school, I access NEMIS					
IT6	Access to the NEMIS interface is quick.					
IT7	When utilizing NEMIS, there are no technological obstacles.					

Section D: Adoption of NEMIS

Statement		SA	A	U	DA	SDA
		5	4	3	2	1
AD1	In NEMIS, student data is easily accessible.					
AD2	NEMIS is a one-stop shop for student data. All essential student information is submitted to NEMIS.					
AD3	NEMIS has allowed us to handle student data more efficiently.					
AD4	The school has faith in the NEMIS system.					
AD5	Data retrieval using NEMIS is quick.					
AD6	In NEMIS, student data is easily accessible.					

Appendix III: Interview Schedule for Sub-County Director of Education

1. a) Do Principals in your Sub-County use national education management information system (NEMIS)?

b) If Yes in (a) above, how effective is the use of NEMIS in submitting educational data to relevant authorities?

2. a) Do Principals come to your office for assistance when using NEMIS to submitting education data to relevant authorities?

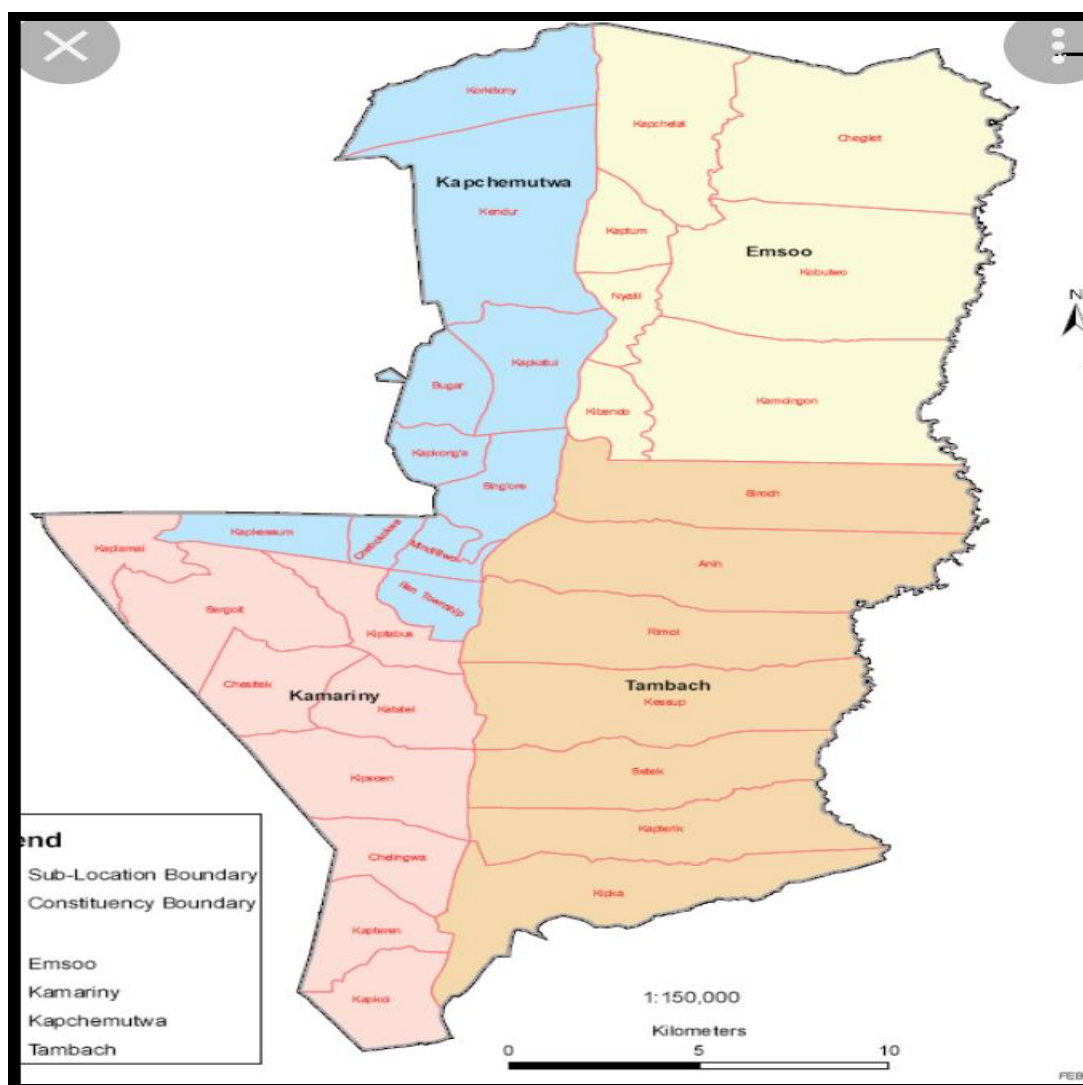
b) If Yes in (a) above, what challenges do they cite when using NEMIS in their Schools?

3. In your own assessment, are the ICT infrastructures in Secondary Schools in the Sub-County adequate for use in NEMIS adoption?

4. Suggest ways of improving NEMIS in Kenya

Thank you very much for taking the time to answer my questions.

Appendix IV: Map of Keiyo North Sub-County



Source: <https://en.m.wikipedia.org> (Accessed 27/09/2022)

Appendix V: Research Permit

 REPUBLIC OF KENYA	 NATIONAL COMMISSION FOR SCIENCE, TECHNOLOGY & INNOVATION
Ref No: 250007	Date of Issue: 04/October/2019
RESEARCH LICENSE	
	
<p>This is to Certify that Mr. SAMSON KASIMIRI of Moi University, has been licensed to conduct research in Elgeyo-Marakwet on the topic: SECONDARY SCHOOL PRINCIPALS' PREPAREDNESS IN ADOPTION OF NATIONAL EDUCATION MANAGEMENT INFORMATION SYSTEM: A CASE OF KEIYO NORTH SUB-COUNTY, ELGEOYO-MARAKWET COUNTY for the period ending : 04/October/2020.</p>	
License No: NACOSTI/P/19/1850	
250007	
Applicant Identification Number	Director General NATIONAL COMMISSION FOR SCIENCE, TECHNOLOGY & INNOVATION
	Verification QR Code
	
<p>NOTE: This is a computer generated License. To verify the authenticity of this document, Scan the QR Code using QR scanner application.</p>	

Source: National Commission for Science, Technology and Innovation, 2019

Appendix VI: University's Introductory Letter



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/PGES/1001/17

DATE: 23rd September, 2019

The Executive Secretary

National Council for Science and Technology
P.O. Box 30623-00100

NAIROBI

Dear Sir/Madam,

RE: RESEARCH PERMIT IN RESPECT OF SAMSON MANANI KASIMIRI- (EDU/PGES/1001/17)


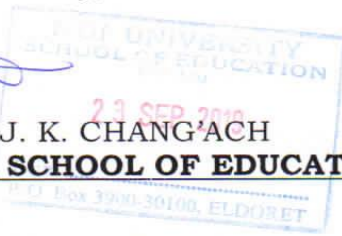
The above named is a 2nd year Master of Education (M.Ed) student at Moi University, School of Education, Department of Educational Management and Policy Studies, School of Education.

It is a requirement of his M.Ed Studies that he conducts research and produces a thesis. His research is entitled:

“Secondary School Principals’ Preparedness in Adoption of National Education Management Information System: A Case of Keiyo North Sub-County, Elgeiyo-Marakwet County.”

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

Yours faithfully,



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



(ISO 9001 – 2015 Certified Institution)

Appendix VII: County Director of Education Authorization Letter



**REPUBLIC OF KENYA
MINISTRY OF EDUCATION
STATE DEPARTMENT OF EARLY LEARNING AND BASIC EDUCATION**

TELEGRAM:.....
TELEPHONE NO: 0534142207
WHEN REPLYING PLEASE QUOTE OUR REFERENCE
EMAIL: cdeelgeyomarakwet@gmail.com

COUNTY DIRECTOR OF EDUCATION
ELGEYO MARAKWET COUNTY
P.O. BOX 214-30700
ITEN.

DATE: 13th January, 2020


REF No: CDE/EMC/R/26/VOL.III/ (12)

SAMSON MANANI KASMIRI - EDU/PGES/1001/17
MOI UNIVERSITY
P.O. BOX 3900
ELDORET, KENYA

RE: RESEARCH AUTHORIZATION

Reference is made to your letter **Ref. No. NACOSTI/P/ 19/1850** dated **23rd September, 2019** on the above subject. You are hereby granted authority to proceed with your study on **“Secondary School Principals’ Preparedness in Adoption of National Education Management Information: A Case of Keiyo North Sub-County, in Elgeyo Marakwet County”** for a period ending **4th October, 2020**.

Please accord him the necessary assistance.


Rose C. Boiyo
For: County Director of Education
ELGEYO MARAKWET

DR. COUNTY DIRECTOR OF EDUCATION
ELGEYO MARAKWET
P.O. Box 214 - 30700.



Copy to:

1. The Sub-county Director of Education – Keiyo Sub-County

Source: County Director of Education- Elgeyo Marakwet County, 2020

Appendix VIII: County Commissioner's Authorization Letter



OFFICE OF THE PRESIDENT
MINISTRY OF INTERIOR & COORDINATION OF NATIONAL GOVERNMENT

Telegrams: "DISTRICDTER" Iten
Telephone: (053) 42007
Fax : (053) 42289
E-mail: ccelgeyomarakwet@yahoo.com
ccelgeyomarakwet@gmail.com
When replying please quote

COUNTY COMMISSIONER'S OFFICE,
ELGEYO-MARAKWET COUNTY,
P.O. BOX 200-30700
ITEN

Ref. PUB/CC/24/2 VOL.11/195
.....

Date 13th January, 2020
.....

TO WHOM IT MAY CONCERN

RE: RESEARCH AUTHORIZATION

SAMSON MANANI KASIMIRI – (EDU/PGES/1001/17)

This is to confirm that the above named has been authorized to carry out a research on "*Secondary School Principals' Preparedness in Adoption of National Education Management Information System: A case Study of Keiyo North Sub – County, Elgeyo Marakwet County.*" for the period ending 4th October, 2020.

Please accord him the necessary assistance.

JULIUS K. MAIYO, HSC
FOR: COUNTY COMMISSIONER
ELGEYO MARAKWET COUNTY

COUNTY COMMISSIONER
ELGEYO MARAKWET COUNTY

CC: All Deputy County Commissioners
Elgeyo Marakwet County

Source: County Commisioner- Elgeyo Marakwet County, 2020

Appendix IX County Secretary's Authorization Letter



**COUNTY GOVERNMENT OF ELGEYO MARAKWET
OFFICE OF THE COUNTY SECRETARY**

All correspondence to be
Addressed to; County Secretary

P.O BOX 220 – 30700, ITEN
TEL: 05342277
Email: emcounty2013@gmail.com

Your Ref:
Our Ref: EMC/ADM. 69/II/354

DATE: 20th January, 2020

Sub- County Administrators/Ward Administrators

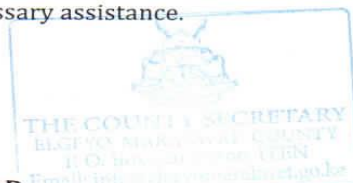
RE: RESEARCH AUTHORIZATION
SAMSON MANANI KASIMIRI - (EDU/PGES/1001/17)

The above matter refers.

This is to confirm that the above named has been authorized to carry out a research on **Secondary School Principals' Preparedness in adoption of National Education Management Information System: A case Study of Keiyo North Sub- County, Elgeyo Marakwet County.** For the period ending **4th October, 2020.**

Please accord him the necessary assistance.

PAUL CHEMMUTTUT
COUNTY SECRETARY/HEAD
OF COUNTY PUBLIC SERVICE



Cc.

H.E. GOVERNOR

Source: County Government- Elgeyo Marakwet County, 2020

Appendix X: List of Secondary Schools in Keiyo North Sub- County

1. ST. PATRICKS HIGH SCHOOL ITEN
2. SING'ORE GIRLS HIGH SCHOOL
3. TAMBACH BOYS HIGH SCHOOL
4. AIC KESSUP GIRLS SECONDARY SCHOOL
5. ANNIN GIRLS SECONDARY SCHOOL
6. ST. FRANCIS KIMURON SECONDARY SCHOOL
7. KIPSOEN BOYS SECONDARY SCHOOL
8. ST. THOMAS KABULWO SECONDARY SCHOOL
9. SIROCH SECONDARY SCHOOL
10. BUGAR DAY SECONDARY SCHOOL
11. KAPKONG'A DAY SECONDARY SCHOOL
12. KAPTUM SECONDARY SCHOOL
13. KAPKESSUM SECONDARY SCHOOL
14. KIBARGOYET SECONDARY SCHOOL
15. CHEBONET SECONDARY SCHOOL
16. ST. PETERS' ITEN DAY SECONDARY SCHOOL
17. KESSUP MIXED DAY SECONDARY SCHOOL
18. KABORE SECONDARY SCHOOL
19. KIBENDO SECONDARY SCHOOL
20. MUNO SECONDARY SCHOOL
21. SERGOIT SECONDARY SCHOOL
22. CHEGILET SECONDARY SCHOOL
23. KAPKOI SECONDARY SCHOOL
24. CHELINGWA SECONDARY SCHOOL
25. ST. ALPHONSUS MUTEI GIRLS' SECONDARY SCHOOL
26. KORKITONY SECONDARY SCHOOL
27. KAPCHELAL SECONDARY SCHOOL
28. KOKWAO SECONDARY SCHOOL
29. KAMARINY DAY SECONDARY SCHOOL
30. ANNIN DAY SECONDARY SCHOOL

Source: Author's Compilation, 2020

Appendix XI: ICT Infrastructure Observation Checklist

What ICT infrastructure did you typically see in the secondary schools under study?

SR No.	SECONDARY SCHOOL	CATEGORY	ICT INFRASTRUCTURE					
			COMPUTER LAB	DESKTOP	LAPTOP	INTERNET	DIGITAL CAMERA	PRINTER/ SCANNER
1.	ST. PATRICKS	NATIONAL						
2.	SING'ORE GIRLS	EXTRA-COUNTY						
3.	TAMBACH BOYS	EXTRA-COUNTY						
4.	AIC KESSUP GIRLS	EXTRA-COUNTY						
5.	ANNIN GIRLS	COUNTY						
6.	ST. FRANCIS KIMURON	COUNTY						
7.	KIPSOEN BOYS	COUNTY						
8.	ST. THOMAS KABULWO	SUB-COUNTY						
9.	SIROCH	SUB-COUNTY						
10.	BUGAR DAY	SUB-COUNTY						
11.	KAPKONG'A DAY	SUB-COUNTY						
12.	KAPTUM	SUB-COUNTY						
13.	KAPKESSUM	SUB-COUNTY						
14.	KIBARGOYET	SUB-COUNTY						
15.	CHEBONET	SUB-COUNTY						
16.	ST. PETERS' ITEN DAY	SUB-COUNTY						
17.	KESSUP MIXED DAY	SUB-COUNTY						
18.	KABORE	SUB-COUNTY						
19.	KIBENDO	SUB-COUNTY						
20.	MUNO	SUB-COUNTY						
21.	SERGOIT	SUB-COUNTY						
22.	CHEGILET	SUB-COUNTY						
23.	KAPKOI	SUB-COUNTY						
24.	CHELINGWA	SUB-COUNTY						
25.	ST. ALPHONSUS MUTEI GIRLS'	SUB-COUNTY						
26.	KORKITONY	SUB-COUNTY						
27.	KAPCHELAL	SUB-COUNTY						
28.	KOKWAO	SUB-COUNTY						
29.	KAMARINY DAY	SUB-COUNTY						
30.	ANNIN DAY	SUB-COUNTY						

Source: Author's Compilation, 2020