

**FACTORS INFLUENCING SLOW IMPLEMENTATION OF EDUCATION
MANAGEMENT INFORMATION SYSTEM IN KISUMU EAST SUB COUNTY,
KISUMU COUNTY - KENYA**

**BY
NYAMBAGA JOSIAH MUYESU**

**RESEARCH PROJECT REPORT SUBMITTED IN PARTIAL
FULFILLMENT OF THE REQUIREMENTS FOR THE AWARD OF
THE DEGREE OF MASTER OF ARTS IN PROJECT
PLANNING AND MANAGEMENT OF THE
UNIVERSITY OF NAIROBI**

2016

DECLARATION

This research project report is my original work and has not been presented for any award in any university.

Signature _____

Date_____

NYAMBAGA JOSIAH MUYESU

L50/69473/2013

This research project report has been submitted for examination with our approval as the University supervisors.

Signature _____

Date_____

PROFESSOR CHARLES M. RAMBO

LECTURER DEPARTMENT OF EXTRA-MURAL STUDIES

UNIVERSITY OF NAIROBI

Signature _____

Date_____

DR. RAPHAEL NYONJE

SENIOR LECTURER

UNIVERSITY OF NAIROBI

DEDICATION

I dedicate this research project report to my lovely daughter Letisha M. Muyesu and my dear wife Harpreet K. Muyesu. For being the driving force in my life and a constant reminder that happiness is self-made and it's realized through appreciation of simple treasures in life.

ACKNOWLEDGEMENT

I wish to acknowledge the immense contribution and support of various authorities whose inputs led to the successful development and completion of this project. Foremost, I wish to express my gratitude to my supervisors Professor Rambo Charles of the University of Nairobi and Dr. Raphael Nyonje of the University of Nairobi, Department of Extra Mural Studies. Their constant devotion to the conception, design and successful development of this research proposal as well as their constructive criticisms is greatly valued and appreciated.

My deep appreciation goes to my parents Mr. and Mrs. Francis Nyambaga for instilling in me the value of education and for always encouraging me to further my education. Your constant encouragement always made me go the extra mile. Thank you for the tremendous advice you have given me over the years which has seen me attain my academic goals at this level. Finally special thanks to Bernard K. Muronga who has been a great mentor of mine since I started this course. His contribution through the advice he gave both in coursework and the development of this paper is highly valued and appreciated.

TABLE OF CONTENT

	Page
DECLARATION	i
DEDICATION	ii
ACKNOWLEDGEMENT	iii
TABLE OF CONTENT	iv
LIST OF TABLES	vii
LIST OF FIGURES	viii
LIST OF APPENDICES	ix
LIST OF ABBREVIATIONS AND ACCRONYMS	x
ABSTRACT	xi
INTRODUCTION	1
1.1 Background of the Study	1
1.2 Statement of the Problem.....	5
1.3 Purpose of the Study	6
1.4 Research Objectives.....	6
1.5 Research Hypotheses	6
1.6 Significance of the Study	6
1.7 Basic Assumptions of the Study	7
1.8 Limitations of the Study.....	8
1.9 De-limitations of the Study	8
1.10 Definition of Key Terms used in this Study	9
1.11 Organization of the Study	9
CHAPTER TWO	10
LITERATURE REVIEW	10
2.1 Introduction.....	10
2.2 Administrative Factors and Implementation of EMIS	10
2.2.1 Government Policy on Implementation of EMIS	11
2.2.2 Governance and Implementation of EMIS	12
2.2.3 Management and Operations on Implementation of EMIS	14
2.3 Social Factors Influencing Implementation of EMIS	16
2.3.1 Information Technology on Implementation of EMIS	16
2.3.2 Change Management on Implementation of EMIS	18

2.4 Strategic Factors Influencing Implementation of EMIS	19
2.4.1 ICT reforms on Implementation of EMIS	19
2.4.2 Information Needs on Implementation of EMIS	21
2.4.3 Institutional Building and Capacity Development on Implementation of EMIS	24
2.5 Economic Factors Influencing Implementation of EMIS	26
2.5.1 Donor Funding and Implementation of EMIS	26
2.5.2 Budgetary Allotment on Implementation of EMIS	28
2.6 Theoretical Framework.....	29
2.7 Conceptual Framework.....	31
2.8 Summary of Reviewed Literature.....	33
CHAPTER THREE	35
RESEARCH METHODOLOGY.....	35
3.1 Introduction.....	35
3.2 Research Design.....	35
3.3 Target Population.....	35
3.4 Sample Size and Sampling Procedures.....	36
3.4.1 Sample Size.....	36
3.4.2 Sampling Procedure.....	36
3.5 Research Instruments	37
3.5.1 Pilot Testing.....	38
3.5.2 Validity of the Research Instrument	39
3.5.3 Reliability of the Research Instrument	39
3.6 Data Collection Procedure	40
3.7 Data Analysis Technique	40
3.8 Ethical Considerations	40
CHAPTER FOUR.....	42
DATA ANALYSIS, PRESENTATION, INTERPRETATION AND DISCUSSION.....	42
4.1 Introduction.....	42
4.2 Questionnaire Response Return Rate.....	42
4.3 Demographic information of the Respondents	42
4.4 Implementation of EMIS	44
4.4.1 Extent of Implementation of EMIS.....	44
4.5 Factors Influencing Implementation of Education Management Information System.....	46

4.5.1 Administrative Factors and Implementation of Education Management System	46
4.5.1.2 Good Governance	49
4.5.2 Social Factors and Implementation of Education Management Information System	56
4.5.2.2 Change Management on EMIS	58
4.5.3.1 ICT Reforms	64
4.5.3.2 Information Needs	66
4.5.3.3 Institution Building and Capacity Development.....	68
4.5.4 Economic Factors.....	73
4.5.4.1 Donor Funding	73
4.5.4.2 Budget Allotment.....	75
4.5.5 Moderating Variable	79
CHAPTER FIVE	80
SUMMARY OF FINDINGS, CONCLUSIONS AND RECOMMENDATIONS.....	80
5.1 Introduction.....	80
5.2 Summary of the Study Findings	81
5.2.1 Administrative Factors on the Implementation of EMIS.....	81
5.2.2 Social Factors on the Implementation of EMIS.....	81
5.2.3 Strategic Factors and Implementation of EMIS.....	81
5.2.4 Economic Factors on the Implementation of EMIS	82
5.3 Conclusions.....	82
5.4 Recommendations.....	83
5.5 Suggestion for Further Studies.....	84
REFERENCES:	85
APPENDICES:	89

LIST OF TABLES

Table 4.1 Response Return Rate	42
Table 4.2 Demographic Data of the Respondents	43
Table 4.3 Extent of Implementation of EMIS.	45
Table 4.4 Government Policies.....	48
Table 4.5 Good Governance	50
Table 4.6 .Management and Operation of EMIS.....	52
Table 4.7 Correlation between Administrative factors and Implementation of EMIS.	53
Table 4.8 Regression of Administrative factors on Implementation of EMIS.	54
Table 4.9 Summary Model for Percentage Explained by Administrative Factors.	54
Table 4.10 Information Use and Acceptance.....	57
Table 4.11 Change in Management	59
Table 4.12 Correlation between Social Factors and Implementation of EMIS	60
Table 4.13 Relationship between Information use and Acceptance,	61
Table 4.14 Coefficient Results for influence of Social Factors.	61
Table 4.15 Summary Model Results for The influence of the Mean Social Factors.....	62
Table 4.16 ICT Reforms	65
Table 4.17 Information Needs	67
Table 4.18 Institutional Building and Capacity Development.....	69
Table 4.19 Relationship between Mean Strategic Factors and Implementation of EMIS..	70
Table 4.20 Correlation between Factors underlying Strategy and Implementation	71
Table 4.21 Coefficient Results for the Influence of Strategic Factors on Implementation.	71
Table 4.22 Model Summary for the Influence of Strategic Factors on the Implementation	72
Table 4.23 Donors Funding	74
Table 4.24 Budget Allotments	76
Table 4.25 Correlation between Economic Factors and Implementation of EMIS.....	77
Table 4.26 Regression of Administrative factors on Implementation of EMIS.	77
Table 4.27 Summary Model for Economic Factors.....	78

LIST OF FIGURES

Figure 2.1: Conceptual Framework	31
--	----

LIST OF APPENDICES

Appendix I: Letter of Transmittal	89
Appendix II: Questionnaire for Head Teachers and Deputy Head teachers	90
Appendix III: Questionnaire for Key Informants (Interviews).....	98
Appendix IV: Kisumu East School Classification data	103
Appendix V: Research Permit	104
Appendix VI: Map of Study Area.....	105

LIST OF ABBREVIATIONS AND ACCRONYMS

BOM	:	Board of Management
DQASO	:	District Quality Assurance Officer
DEO	:	District Education Officer
EFA	:	Education For All
EMIS	:	Education Management Information System
FPE	:	Free Primary Education
GOK	:	Government of Kenya
I.T	:	Information Technology
MDGS	:	Millennium Development Goals
MIS	:	Management Information Systems
MOE	:	Ministry of Education
MOEST	:	Ministry of Education, Science and Technology
M & E	:	Monitoring and Evaluation
NGO	:	Non-Governmental Organization
ZQASO	:	Zonal Quality Assurance Officer

ABSTRACT

An information system is a coordinated and organized platform that involves people, hardware, software, communications networks, and data resources that collects, transforms, and disseminates information within an organization. When an information system provides information for the management of educational development and for effective decision-making, monitoring and evaluation of education activities, it is called an Education Management Information System (EMIS). Hence, the main purpose of this study was to determine the factors influencing the slow implementation of Education Management Information System in primary schools within Kisumu East Sub County in Kisumu County, Kenya. The objectives of the study are to: Assess the extent to which administrative factors influence the implementation of EMIS in schools within Kisumu East Sub County, determine the extent to which social factors influence the implementation of Education Management Information System in Kisumu East Sub County; establish the extent to which strategic factors influence the implementation of Education Management Information System in Kisumu East and finally to determine the extent to which economic factors influence the implementation of Education Management Information System in Kisumu East Sub County. This study adopted the Diffusion of Innovation theory which was regarded as a valuable change model for guiding technological innovation where the innovation itself was modified and presented in ways that meet the needs across all levels of adopters. The study also utilized the descriptive survey design that involved collecting information by interviewing or administering a questionnaire to a sample of individuals. The target population comprised of 150 primary school Head teachers and Deputy Head teachers from 75 public and private schools within Kisumu East Sub County who are directly tasked in administration of EMIS in schools on behalf of the Ministry for planning purposes. Ministry officials such as the CDE, CQASO, DQASO, ZQASO and Registry Officers (clerks) in charge of Kisumu East Sub County were also part of the respondents in the data collection as key informants. The sample size of the study comprised of 63 public and private primary schools translating to 126 Head teachers and Deputy Head teachers within Kisumu East Sub County and it is believed that this number formed a convenient sample as well as a correct representation of the entire population of Kisumu East Sub County schools. Research instruments used in primary data collection were structured questionnaires and key informant interviews on educational experts to complement the process. A pilot study was conducted on a few respondents at the neighboring Kisumu West Sub County at the DEO's office to help identify any gaps in the overall design and instrumentation. The researcher was assisted by 2 trained research assistants to administer the questionnaires. Quantitative data was analyzed using descriptive statistics such as mean, standard deviation, percentages and correlation analysis. These were then used to establish the degree of association between the variables. The findings which were presented in form of frequency tables and charts revealed that administrative factors explained only 10.6%, while social factors explained 14.9% significant change in EMIS. Strategic and economic factors explained 48.3% and 43.9% significant change in EMIS implementation respectively. It was recommended that, under administrative factors be clarified so as to enhance awareness in schools. On social factors, teachers should be trained on information use and acceptance, while under strategic factors, capacity building and institutional development should be intensified by the government and finally for economic factors, donor agencies should allocate their funds properly to enhance EMIS implementation. In conclusion, this report presents the findings that were noted as hindering the digital uptake of EMIS in Kisumu East Sub County and the wider Kenyan nation at large.

CHAPTER ONE

INTRODUCTION

1.1 Background of the Study

In Kenya, Africa and around the world, institutions and organizations have recognized information as a valuable resource that aids in effective management and decision making. Without accurate data, decisions and policies will be compromised hence hindering organizational performance and resource allocation. An information system is any organized combination of people, hardware, software, communications networks, and data resources that collects, transforms, and disseminates information in an organization (O'Brien 2002). There are different types of information systems that can be employed in regards to specific needs. Decision Support System (DSS) contains models or formulas that manipulate data into information and often answers 'what if?' question. Group Decision Support System (GDSS), generates ideas, establish priorities and reach decisions in group environment. Executive Information System (EIS) gathers information from vast amounts of data for high levels executives. Geographic Information System (GIS) represents local conditions or features and allows planning, decision making and monitoring of local conditions or activities. Education Management Information System (EMIS) focuses on collection of information that helps in education planning and management.

EMIS stands for 'Education Management Information Systems'. It refers to a coordinated system designed to systematically organize data related to the management of educational development pertaining to education services and resources. EMIS platform seeks to have a defined structure that provides the Ministry of Education timely and accurate indicators on enrolment, attendance, relevance and quality of learning for planning and decision making towards an efficient utilization of resources to reduce education inequalities. EMIS is relatively a new concept that arose from the need to embark into a more coordinated form of management for information on education (Wako, 2003). Every MOE office have a designated "Statistics" section or department that is solely responsible for collection of education statistics on a continuous basis. In Kenya for instance, this section is now being transformed into EMIS so as to scale and improve the collection of educational information from schools. The goal here is to collect reliable, timely and

accurate data to support educational development in different spheres such as decision making, planning, and resource allocation among others. Therefore, educators must understand that efficient information management is an important condition for continued social and economic development (Chapman and Dhungana, 1991).

In 2008, the EMIS was first adopted by Kenya as an initiative towards improving quality of education through collection of reliable data that can inform effective planning and decision making. Since EMIS was a new concept and given the infrastructural challenges that many primary schools faced, it was thought appropriate to train and empower the DEO's office to enable it collect the manual information from the school heads and enter the information through a set of computers that were provided to them. The approach used was standardized and cutting across the entire nation, provided training in 2008 to the DEO's through their respective DQASO's in Nairobi. The EMIS accommodated only one user at that time since most primary school head teachers were unable to key data in computers and also not all primary schools were able to get computers to capture data.

Since its implementation, support to sustain the entire system was inadequate due to poor cooperation in handing in reports by head teachers as well as lack of a competent IT unit of the MOE to supervise the process after which the process flopped and the head teachers went back to the process of collecting EMIS data manually and submitting hard copies to the Central EMIS through courier. In Kenya, a few organizations attempted to partner with the MOE to find out reasons as to why EMIS could not be sustained through the support of DEO's as the focal persons on ground in data collection. Reports that were conducted revealed that some head teachers were uninterested due to the vigorous process of providing information which they thought could have been assigned to a different person/party at school level; the EMIS computers that were stationed at the DEOs office to collect data were not put into use due to laxity experienced by information providers at school level and soon got spoilt. The same case applies to CD-ROMs and other equipment that was provided to DEOs office to kick start EMIS were in a poor state and repair was by them cost for local offices to afford.

Bangladesh according to InfoDev (2006) has had a commendable history of successful data collection, beginning in the early 1990s with the implementation of the first school

census. This is as a result of the support they received from donor aid which enabled the country to build a well-coordinated system that could support collection of huge amounts of analytical data to measure the quality of educational inputs which entails among others physical facilities, materials, number of text books, numbers and training status of teachers as well as the internal efficiency of the education system. EMIS unit plays a significant role in helping the Ministry to formulate operational plans as well as monitor progress towards achieving such plans. This structure has placed Bangladesh on the forefront in as far as collection of quality data and processing for better education management and decision making is concerned. It is also imperative to note that donor aid played a key role in this structural set up.

Ghana, just like Bangladesh has also made strides by recognizing the important role that EMIS is beginning to play in supporting the process of decentralization. InfoDev (2006) notes that outputs from the EMIS in Ghana are being used to support the development of operational plans and budgets at the district level in order to help improve operational efficiency, promote responsiveness and improve service delivery. MOE in Ghana hopes that the changes that will be realized will support district offices to have more autonomy in developing their plans, which could also give them discretion over spending their annual budgets.

Conversely in Africa, just like Kenya, Mozambique and Nigeria have experienced opposite results in the many years of EMIS implementation thereby suffering a number of challenges. Powell (2006) notes that a majority of technical problems associated with data collection appear to originate from the design of the data collection instruments and the processes associated with their implementation. The EMIS implementation challenges experienced in Mozambique and Nigeria could be attributed to the use of a census form that varied in length from 10 to 20 pages which could be administered from a central or regional office and involved asking the head teacher a series of questions. The census form was marred by a lot of inconsistencies such as lack of compatibility between census forms and school record keeping which prevented head teachers from responding to requests from provincial offices or ministries. Complex calculations that were undertaken to produce data on the census form by head teachers could be attributed to some of the reasons why head teachers got detached from the entire process.

Kenya is one of the countries on the forefront in trying to implement successful EMIS in schools. Initiatives to improve data collection system in Kenya have been underway for years with the aim of improving education standards and progress has been noted in the recent past though much effort is still required. MOE is expected to spearhead the entire EMIS process so as to realize stability in educational management countrywide. Whereas some of these initiatives are being undertaken, a number of key issues that are affecting such initiatives are not being addressed by the government. Provision of adequate facilities such as computers in schools and at the district levels, training of teachers on EMIS systems, allocating enough budgetary resources towards acquiring these structures and also being able to attract investors and donors to invest and support such education initiatives is lacking or rather has not been given full support, a fact which explains why most schools (both head teachers and fellow teachers) would still prefer the paper based system specification.

Improper education reforms also weaken the systems rather than strengthening it. This is because, the reforms that are being advocated by many education experts in Kenya never get to materialize into reality and are normally sidelined especially when they tend to touch on or are deemed to have enormous financial implications. This is supported by Lovely (2010) who asserts that EMIS process is necessarily time consuming given that quite often the development of the EMIS is coinciding with the introduction of radical changes to the education system itself, it is quite likely that the requirements will themselves have changed by the time the EMIS is implemented. Several factors have influenced the implementation of the EMIS in schools which has led to poor allocation of education resources and services in schools within Kenya. Kisumu East Sub County like many other sub counties has also struggled with education inequality issues presented due to improper systems and so this research report seeks to present findings on the major factors influencing the implementation of the EMIS process.

Discussions have been tailored to revolve around four thematic areas that underpin this report. Foremost, discussion on the administrative factors have been discussed which has been further divided into different indicators that include; Government policies, Good governance and Management and operations of EMIS. The second objective of social factors focuses on two major indicators which are information use and acceptance as well as change management at the organizational level. Strategic factors are further divided

into three indicators of ICT reforms, Information needs and Institutional building and capacity development. The last objective on economic factors focus on two indicators which are donor funding and budgetary allotment. Influence of these themes in the implementation of EMIS have been extensively discussed in the literature review.

1.2 Statement of the Problem

There are an increasing number of countries which have adopted the EMIS and have already failed (Wako, 2003), maybe because the EMIS structure is insufficient in coping with the fast growing demands for information (Moses, 2000). Ministry of Education in Kenya adopted EMIS as a way of improving data collection mechanisms from schools so as to be able to have first-hand quality data that can help in measuring performance and resource utilization. This could consequently aid in understanding transparency and accountability at all education levels within the country. However, this process since the inception has been flawed by many setbacks. The unequal distribution of education resources and unequal provision of education services in the country is largely attributed to lack of data to coordinate planning and management at the national level. For instance, what explains the fact that in some rural parts of the country, a child must still walk for over 10KMs every morning to access a primary school (Walking a total of 20KMs every day)? What explains why some children must still learn under trees for a whole day? What explains why some school children must still rely on the 'bush' as their toilets? (Bonyo, 2012).

Therefore the main problem underlying this study is: why have EMIS efforts in the MOE not been more successful to ensure equal distribution of education resources and services in primary schools within Kisumu East Sub County? To address these problem, four thematic areas have been investigated, such as: administrative factors, social factors, strategic factors and economic factors and their influence in the effective implementation of EMIS. Low data quality is a more serious constraint on data use in educational level management and policy formulation. There is confusion about how to structure interventions to encourage data-based decision making (Chapman and Dhungana, 1991). These challenges among others are still being faced in Kisumu East Sub County. There have been claims to increase the allocations by the government per school in the county but this increase only has to be supported by relevant and reliable data which solely lies on EMIS. Studies on the factors influencing slow EMIS implementation were lacking in

Kisumu East Sub County and therefore this study sought to provide more insight into the subject matter.

1.3 Purpose of the Study

The main purpose of this study was to investigate the factors influencing the implementation of Education Management Information System within Kisumu East Sub County, Kenya.

1.4 Research Objectives

The study sought to achieve the following objectives:

- i) To assess the extent to which administrative factors influence the implementation of Education Management Information System in Kisumu East Sub County.
- ii) To determine the extent to which social factors influence the implementation of Education Management Information System in Kisumu East Sub County.
- iii) To establish the extent to which strategic factors influence the implementation of Education Management Information System in Kisumu East Sub County.
- iv) To determine the extent to which economic factors influence the implementation of Education Management Information System in Kisumu East Sub County.

1.5 Research Hypotheses

The study was guided by the following research hypotheses:

- i) Administrative factors have a high influence on the implementation of Education Management Information System in Kisumu East Sub County.
- ii) There is a high influence of social factors on the implementation of Education Management Information System in Kisumu East Sub County
- iii) Strategic factors have a high influence on the implementation of Education Management Information System in Kisumu East Sub County.
- iv) Economic factors have a high influence on the implementation of Education Management Information System in Kisumu East Sub County

1.6 Significance of the Study

This research was anchored on one main purpose of making a contribution to the theoretical knowledge, use and adoption of Education Management Information System in schools by school personnel. This entailed investigating factors which hinder the

digital uptake of EMIS by schools and other concerned parties who implement it, perceptions of intended users on EMIS and the general efforts being undertaken to strengthen EMIS so as to improve education outcomes in through provision of equal resources and services to schools.

It is hoped that findings from this research will provide useful information to the ministry in Kisumu and Kenya at large concerning the reasons why the EMIS has never fully picked up in schools since its first implementation in 2008. Findings from the study can be useful to provide a perspective on current state of EMIS adoption and use in other primary schools that share similar conditions to that of the research area/site.

Think-tanks from different spheres concerned with policy issues such as ministry planners, CEO, CQASOs, DQASOs, NGOs and donors will hopefully benefit from the findings in this report which is bound to foster a rethinking on some of the assumptions on which EMIS adoption and usage is based on.

1.7 Basic Assumptions of the Study

The following assumptions were critical to note for this study to be credible and successful. It was assumed that technology would remain as a key platform for gathering information effectively and that technological instruments such as cell phones, tablets and computers among others would remain relevant and with continuous improvements scale the heights of gathering information. Another assumption was that decision making processes for education management could only be supported by information and data and that production of reliable indicators to guide policy makers in mapping education advancement would be supported by information needs through data construction and processing for provision of quality education within Kisumu East Sub County and in Kenya at large.

The researcher also assumed that the respondents, that is, the Head teachers and the Deputy Head teachers would be available during the administration of questionnaires and that the information gathered from them would be valuable to represent the views of the entire population as the subjects are the people mandated to collect information on behalf of the Central Ministry for educational planning and management.

1.8 Limitations of the Study

There were potential weaknesses that hindered the effective implementation of this study. The main challenge experienced was particularly on the rainy season (El Nino) rendered a few roads impassable to access the interior parts of some few schools. This was encountered by rescheduling meetings with head teachers of the affected schools.

Cases of some Deputy Head teachers refusing to respond to the survey until they get approval from their respective head teachers was also witnessed. This was solved by getting consent and approval from the Head teachers first so as to enable collecting data from the Deputy Head teacher. Few cases of some Head teachers requesting to see the necessary approval letters from the Ministry of Education and wanting to know the purpose of the whole study were experienced as well. The researcher encountered this by presenting the necessary authorization letters obtained from the Ministry of Education and explaining to the respondents the main objective of the study and the need for confidentiality on the information that was gathered and therefore receiving the support and cooperation of the respondents.

1.9 De-limitations of the Study

This study was narrowed down to Kisumu East Sub County and the sample was drawn from the head teachers and deputy head teachers of primary schools within Kisumu East Sub County.

Kisumu East Sub County was chosen for this study as there was a pilot EMIS trial that was conducted by the Ministry of Education Science and Technology (MOEST) which sought to test the uptake through use and adoption of Digital EMIS in the region through the capturing of data/information relating to EMIS and presenting this information online to the central EMIS office in Nairobi through the mobile technology. The Sub County also fared poorly in EMIS indicators of progress by recording increased drop-out rates in school attendance especially for the girl child and the completion rate gradually recording a downward trend in the few past years. The Sub County also suffered inadequate infrastructure to support learning in comparison to other Sub Counties which is a key component of EMIS hence educational outcomes were compromised in the long run. Population comprising of BOM (Board of Management) and normal teaching staff did not form part of the study.

1.10 Definition of Key Terms used in this Study

Implementation of Education Management Information System	EMIS is a new concept that arose from the need to embark into a more coordinated form of management for information on education (Wako, 2003). Implementation of EMIS entails putting in place systems that can play a significant role in assisting education experts such as policy-makers, decision-makers, and managers to make timely and data-supported decisions for education management.
Information System	It is an integrated system of man and machine for providing information that supports the operations, management and decision making structure in institutions and organizations.
Administrative Factors	These relate to process of administering with emphasis on the management of a government or large institution..
Social Factors	These are facts and experiences that influence individual's personality, attitude and lifestyle
Strategic Factors	These relate to how EMIS is implemented currently at school level. They include key decisions and plans.
Economic Factors	These are factors that influence the financial structure of a nation. They majorly involve changes such as costs and prices of goods, interest rates, wages rates, rate of inflation etc

1.11 Organization of the Study

Chapters of the study are organized as follows:

Chapter one of this study introduces the problem statement and describes the specific problem that the study addresses as well as the design components. Review of literature and relevant research in line with the problem under study is presented in Chapter two and Chapter three presents the methodology and procedures used for data collection and analysis. Chapter four presents the data analysis as well as interpretation of both the qualitative and quantitative data that was collected and lastly Chapter five dwells on the summary of findings, conclusions and recommendations.

CHAPTER TWO

LITERATURE REVIEW

2.1 Introduction

Existing literature that informs this research has been presented extensively in this chapter. First and foremost, literature is presented on the administrative factors that influence EMIS implementation and emphasis is laid on government policies, good governance as well as management and operations of EMIS by schools. The second is related to the social factors and their influence on EMIS implementation. Thirdly, literature on the strategic factors influencing the implementation of EMIS has been examined to help understand the infrastructural measures that can aid in EMIS implementation and use. The fourth area focuses on economic factors that influence the slow implementation of EMIS in schools. This particularly focused on donor funding and budgetary allotment on EMIS implementation in schools. Finally, the review analyzes the theory underpinning the study and goes ahead to assess the theory's applicability to electronic systems research.

EMIS includes the concept of comprehensive data, which are accessible by computer and available for analysis, for processing and decision making purposes. It is responsible for the promotion and use of information for policy planning and implementation, decision-making, and the monitoring and evaluation of an education system. It provides timely, cost effective and user appropriate information to support educational planning and management (Connal, 2005, Wako, 2003). Literature on the EMIS has been discussed extensively as follows:

2.2 Administrative Factors and Implementation of EMIS

This section presents the different administrative initiatives that the government is undertaking through formulation of policies that can aid in the implementation of successful EMIS. Lessons here are drawn from different findings as presented by literature reviewed on thematic areas such as Government policies, Good governance, and lastly the management and operations of EMIS.

2.2.1 Government Policy on Implementation of EMIS

Today modern education reform programs worldwide are centered on core school curriculum determined by Government policy but the nation's core curriculum requirements are embellished in locally managed schools by trained teachers to reflect the required living skills, regional values and strategic future of their complex national culture.

Demands for information are not constrained to measuring only specific variables. For new policies to be made support education, it is vital for correct information to be provided in a timely fashion so as to make informed decisions. EMIS office has a key responsibility of identifying what information is required by decision and policy makers so as to assist in understanding how educational resources are transformed into outputs with emphasis on resource utilization in the education sector. EMIS information can equally be useful in other fields through proper analysis by managers to produce the intended results.

Borrowing from Ghana's example, evidence demonstrates the important role EMIS can play in supporting operational planning at the national and district levels which portrays the extent of adoption of EMIS for decision making purposes. This example goes further ahead to portray how EMIS data is helping district offices to formulate their annual operational budgets, according to the following funding criteria: 30% is awarded for pupil enrolment levels, 10% is based on the number of schools and 60% according to the disadvantage levels. This disadvantaged criterion is measured according to the following variables: number of untrained teachers, pass marks for science and maths, the type of classroom structures, and availability of water and seating capacity, InfoDev (2006)

In many developing countries in Africa, the governments have started realizing the increasing need for data driven policies. Many factors lead the government to value EMIS and some of the reasons include: Change in leadership which creates new, immediate demand for updates, briefings, and data for new policy initiatives. A report by Techknowlogia (2001), asserts that new leaders rarely trust (often with good reason) the current information system. The report continues further to affirm that broader reform efforts – Wider “modernization efforts” across the government tend to generate calls for greater use of technology and performance measurement at the sectoral level. The reports

also acknowledges that improving internal efficiency is also a common reason as to why governments are valuing EMIS. Ministers seeking to address issues of redundancy or improved targeting of resources typically require a greater degree of data accuracy and precision.

In Nigeria, the state of Kano presents an exemplary case for the development of EMIS. According to InfoDev (2006), obtaining of EMIS support from the grass root levels can have a positive impact which can subsequently foster development. Under the Kano state model EMIS was specifically designed to support state level planning and to generate reports based on enrolment levels, retention rates, facilities, qualified teachers, faculties and other information from the census form. Outputs from EMIS managed to have a direct impact upon the planning process which included the production of reports that highlighted anomalies in the education system such as enrolment declines, enrolment inflations or gender equity issues and as a result, the Kano state house of assembly was able to use EMIS generated reports to justify their 2005 education plan and obtain their annual budget from the Ministry of Education. This is an exemplary case that reveals the interaction between the support provided to EMIS at the local levels and how it relates to the overall benefits for an entire state.

In Kenya and Kisumu East County for that matter, the government has not reached the level of trusting or relying on data on collected from schools. This could be attributed to poor EMIS structures that are currently in place. The delays experienced through submission of data and the time taken to process and analyze the information, make it difficult for effective decision making to be done by the government hence compromising policy formulation for education planning and management.

2.2.2 Governance and Implementation of EMIS

Civil society plays a phenomenal role in advocating for transparency and holding institutions and in particular the government responsible for availing information to citizens so as to improve accountability to the citizens. There continued presence in the recent past has seen to pressures intensifying on governments to provide freedom of access to data and information on government programs, including and in particular data and information on education, data and information on budgets and expenditures. A well-established EMIS structure should be able to provide this information in an environment

that is secure enough in order to protect the privacy rights of individuals. Organizational structures and operations strongly influence the environment in which EMIS develops, and unclear lines of accountability and poor coordination impede EMIS development (Hua & Herstein, 2003).

To re-think EMIS would first of all entail moving away from the assumption that one size fits all. If policies are decided from the top and expected to trickle down to the grassroots may not work so well as different countries have different strategies of responding to different needs. There is no point in implementing a top down approach to EMIS, in a large country with a complex political system. Under such circumstances an EMIS is more likely to succeed using an incremental approach, whereby resources are focused on a small geographical area to ensure maximum impact. Nevertheless, if a country has a political consensus and is characterized by good governance, then a bottom up strategy might be more appropriate. Conversely, in a small developing country a top down approach to EMIS might be more appropriate to ensure that results are achieved as quickly as possible. There will also be instances when a combination of approaches might work best. However, it is important to note that none of these strategies for EMIS is necessarily better than the other, and each represents an attempt by a Ministry or planning unit to respond to different development characteristics (Trucano, 2006).

Kenya has clearly maintained the top-down approach where policies are made and agreed upon at the top but implementation becomes a challenge as implementing through this structure becomes a problem. Support has not been so strong from the local levels as was witnessed in the case example of the state of Kano in Nigeria and so perhaps, a keen follow up should be made certainly assessing the development characteristics of Kenya as a nation to know why EMIS has not fully picked up after several years of implementation in Kenya and Kisumu East Sub County for that matter. Reform initiatives by the MOE to offer quality education in Kenya has led to the partial decentralization of education management and the gradual shift in the responsibility for school effectiveness and improvement from the Ministry to the school. Schools are now able to independently hire staff through their school boards to facilitate shortages, creation of programs in schools to help foster performance as well as sourcing other resources for their schools other than what the government provides. In line with this, the school heads are also mandated to prepare and implement yearly school improvement plans, which was not a common

practice a decade ago. School Based Management approach could be seen as an ‘overall approach to involving participants in the management of schools which includes, in addition to decision-making power, increased professional development to prepare participants for expanded roles in governance and in organizational operations’. (Wohlstetter, Smyer and Mohrman, 1994).

Consequently, information will be required if there is capacity to make the changes required to follow a particular new direction. For example information relating on student achievement, teacher qualifications, and school resources and staff development is required to assist management in their new roles mandated by school-based management (Wohlstetter et al 1994). A case in point is Nigeria which has thirty-seven states and therefore central support is critical to maintaining state EMIS development and the most cost effective solution. If a state EMIS ceases to function it can be easily reactivated by sending EDB staff for several days to the state. This is certainly less expensive and efficient.

On the contrary, in Kenya Governance in the education sector, right from the top level organs to the school level continues to be a major concern especially for the education managers and policy makers. Poor Sector Management and governance at institutional level has been a major contributor to the challenges facing education in Kenya today. The task force reports that efficiency and effectiveness in the sector management is still a challenge. (Task Force Report, 2012)

2.2.3 Management and Operations on Implementation of EMIS

In order to respond to changing information demands, managers must have the appropriate systems and procedures to ensure that valid data is collected and analyzed in a timely manner to support decision making (Wako 2003). A culture of informed decision - making is lacking in many developing countries, Kenya being inclusive. This culture should be founded on a solid background provided by sound EMIS and not for political reasons.

It is also key to note that education management through informed decision-making cannot stand alone without availability of accurate and timely information which is a key prerequisite in linking together resource inputs to education teaching and learning conditions. Cassidy (2006) adds that in some countries the widespread use of information

based decision-making has resulted in more effective and efficient planning and the identification of new information needs. In others however failure to supply information that is timely and reliable has contributed to management inefficiencies and reluctance on the part of decision-makers to use information. Some Ministers of Education know that data collection does not function properly and thus they do not trust it. This is also true of other senior decision-makers in education and other ministries.

Decision-making is often identified with choice, that is, the selection of a specific course of action from among two or more alternatives in order to maximize the expected value of a decision (Rathwell and Burns, 1985). Information is very important to the decision-making process and (Konopka and Korrapati, 2006) note that modern society values knowledge and information as one of its most important assets. This, in essence supports the fact that if schools are given the opportunity to have better EMIS structures, then consequently decision making capacity will be improved in many schools which will in the long run lead to better management at school level by administrators. Sound EMIS structures will ensure that the school administrators are capable of evaluation information before using it. Choo (1996) notes that in order to make important decisions, organizations search for and evaluate information.

Data collection is also a unique problem that is related to decision making. Contrasting methodologies and sampling framework is often seen as the key cause of production of different sets of results. For instance, according to the (InfoDev report, 2006) in Ghana when UNESCO supported the Ministry to implement a Nation-wide school census, while at the same-time UNICEF and JICA funded a national survey to map primary schools with an intention of collecting data on the wider community. Clearly, this was viewed as a waste of resources due to the duplication of activities, and could ultimately lead to a lack of confidence in the data.

Sub contraction of data collection to external agents can also pose a great problem to a nation. For instance in Nigeria where the surveys were put out to tender and a private company was awarded the contract. This led to a substandard work due to the nature of complexities attributed to lack of appropriate skills to oversee the process due to the fact that management skills related with tendering and procurement are very different from those involved in operating an EMIS.

Conversely, Bangladesh is one of the countries that has had a long history of successful data collection. This success could possibly be linked to better management and operations of EMIS structures over the years starting with the implementation of the first school census. Donor support enabled Bangladesh as a country to build a significant amount of analytical data to measure the quality of educational inputs such as physical facilities, materials, and numbers of text books, numbers and training status of teachers. Internal efficiency of the education system could also be measured (Trucano, 2006).

Kenya just like many developing countries however is still grumbling with the management and operationalization of EMIS in schools. This is portrayed by how data is handle at the school level from the initial process of collection to submission of the data to the central EMIS at the national level. A number of challenges being experienced in Kenya, are the same as those being experienced at the Counties and Sub counties levels which questions the accuracy of data being collected at the school level. Lack of knowledge on what EMIS entails due to poor training, poor computer literacy levels by many teachers, untimely delivery of EMIS form back to the central EMIS office are among the challenges that tend to hinder the effective management and operations of EMIS at the local levels. Other than the mentioned examples, Kisumu East Sub County also lags behind in management of EMIS as budgetary allotments being directed towards FPE are not sufficient enough to also cater for the effectiveness of managing EMIS operations in schools.

2.3 Social Factors Influencing Implementation of EMIS

This section focuses general experiences that influence individual's personality and lifestyle. Literature in this section has been reviewed on different thematic areas such as Information Technology Use and acceptance, technology acceptance model, technology use and administration and finally change management at the organization level.

2.3.1 Information Technology on Implementation of EMIS

In recent years, whether education systems are centralized or decentralized, democracy has encouraged more stakeholders to ask more questions about education (Moses, 2000) and this has contributed to the increased demand for information and greater transparency in the decision-making process. Information technology has facilitated work processes and expanded the provision of information. 'Organizations increasingly depend on

information technology for the execution of a variety of operational, tactical, and strategic processes' (Lewis et al, 2003). This means therefore that technology can indirectly increase the quality of managing the process of providing education, and positively influence the quality of education delivery (Konopka and Korrapati, 2006). Through technology, tools for data collection and data management can benefit schools thereby enhancing research productivity. It should be noted that the entire information sharing system that entails elements such as networking, software, hardware elements, and application used in the process that creates a common framework of operations (Konopka and Korrapati, 2006). Technology in this sense could be viewed as a platform to make life easier in as far as data collection and management is concerned. Liker, Haddad and (Karlin, 1999) reminds us that 'whilst technology is ubiquitous, in many ways it makes our lives easier but in other ways it complicates our lives and simple tasks become complex'. For example, the same computer that we use to store, process and analyze our important information, can cause us much grief if the computer file refuses to open. However, providing the technology does not guarantee the use of it.

Finally, Lessen and Sorensen (2006) note that administration should ensure the provision of training and support in order to develop successful and effective users of technology. The training identified by them could be in the form of one-on-one sessions, small group workshops or peer training where, for example, one staff member who have received training can pass on similar training to colleagues. Lessen and Sorensen note that the strategies used in training are very important in conveying the message that technology is a tool, not a topic. Therefore it is essential for the learner to know about how to use the technology to facilitate his/her work and having to learn the technology itself.

In Kenya and Kisumu East Sub County in particular, poor performance and lack of sustainability, combined with a low utilization of EMIS outputs, suggests a need to re-think some of the assumptions upon which EMIS are based as learning conditions are worsening instead of improving. Information technology has enjoyed recognition in Kenya in the recent past through the education reforms that have recognized the need of schools starting to appreciate information technology. Little advancements have been registered for instance, primary schools have recently started making a provision for a computer room where computers through the government will be stored. Some schools have already or are in the process of instituting Computer classes so as to equip learners

with digital skills. This is a great move that is coming in at the time that efforts are being made by the government and other organizations to digitize EMIS. Kisumu East Sub County is also part of this selection though much still need to be done to promote use and adoption of information technology.

2.3.2 Change Management on Implementation of EMIS

Change management entails finding or adopting new methods of managing information possibly from the manual system to an electronic version at the school level. This also involves a subsequent transformation in the way data and information for that matter is managed through collection at both the school and at the Central EMIS levels ‘Organizational change involves a transformation of an organization between two points in time’ (Barnett & Carroll, 1995). Regarding EMIS, this change could be viewed from two perspectives, that is, before and after the implementation of EMIS. Reluctance by many school administrators to embrace the technological change has also been noted in different parts of the world especially in developing countries. For instance most African Countries such as Nigeria and Ghana, where EMIS data collection has always been done manually, there is reluctance by the school administrative management to shift to the electronic use of EMIS. This could be attributed to the perception that EMIS is repetitive and time consuming for many school Heads. Staudenmayer, Tyre and Perlow (2002) note that ‘repeated performance of an organizational task leads to routine, efficiency, and eventually complacency but unexpected problems, however, reveal weaknesses in established strategies and processes, and thus provoke reevaluation, adaptation and change’.

This means therefore that if no problems are encountered in the management of information at the school level, then there will be no need or motivation for a change and the status quo is bound to remain the same. School administrations and teachers hardly effect any innovations or probably find better solutions to the problems facing data management hence according to Dooley (1999) it’s because teachers and administrators see minimal gains and much loss in the changes that are proposed and the result is that innovations will not be well received by teachers due to conflict with firmly entrenched traditions. Moreover, according to Ahn, Adamson and Dornbusch (2004), ‘resistance to change is inevitable, whether overtly or covertly’ and it is the role of the leader to manage this resistance. Implementing EMIS which is an IT-enabled change processes requires

enough planning by managers especially from the MOE. This entails training and re-training of staff to possess the knowledge and skills required for the change process (Benjamin and Levinson, 1993).

2.4 Strategic Factors Influencing Implementation of EMIS

These focus on key decisions, plans and structural designs that can support the implementation of EMIS. Main discussions here revolve around the following thematic areas: ICT reforms, information needs as well as institutional building and capacity development.

2.4.1 ICT reforms on Implementation of EMIS

ICT reforms which is inclusive of teachers trainings on IT can contribute favorably to the enhancement of management skills as relates to the contribution of the overall decision-making process. Training is a key component in the realization of EMIS implementation as without the training component, advances in technology cannot be matched by the very people who are expected to implement EMIS especially at school levels. OECS (2000) notes that, 'without training and technical support, teachers and managers will take a much longer time to achieve proficient and effective use of ICT and are likely to maintain the old ways of operating'.

For information management that involves collection, analysis and dissemination to be done in an efficient and effective manner, it is necessary to choose the appropriate ICT for the context in which EMIS operates. This should be guided by information requirements and not hardware or software issues. (Gamage and Sooksomchitra, 2004) reminds us that 'real reforms in education require extensive, consistent support, accompanied by in-service training and technical assistance for school leaders, enabling them to change management and planning skills, and helping them to deal with the school and classroom implications of reforms'. Wako (2003) notes that training is one of the essential components of the EMIS and in addition because the field of technology is changing fast and manpower turnover is high, training must be viewed as a continuous activity.

ICT reforms in line with EMIS implementation requires a number of activities or measures to be put in place so as to realize better information management at the school level. Provision of basic level IT training to DEO, CQASOs and head teachers as well as

incorporating them in forums to discuss the outputs of data that is collected on an annual basis are all efforts that will be deemed necessary to reduce paper-based systems and increase efficiency in the workplace. Gamage and Sooksomchitra (2004) also point out that 'real reforms in education require extensive, consistent support, accompanied by in-service training and technical assistance for school leaders, enabling them to change management and planning skills, and helping them to deal with the school and classroom implications of reforms'. It is also evident that training is one of the essential components of the EMIS and in addition because the field of technology is changing fast and manpower turnover is high, training must be viewed as a continuous activity (Wako, 2003).

For reforms to be effective, some level of consistent support that goes hand in hand with in service training are essential in managing the change process. The Ministry of Education needed to play its part in providing the schools with the necessary support to assist them in managing the change process. The administration of the school also had to play its part in making school-level decisions to facilitate the change process (Gamage and Sooksomchitra, 2004). We are also reminded that consistent support will enable Principals to change management and planning skills and will help them deal with school implications of reforms (Gamage and Sooksomchitra, 2004).

In support of the views presented above, a given number of countries have taken advantage of advances in technology and falling costs to elevate their performance on EMIS. Case examples here include ministries in Bangladesh and Nigeria who have taken up the initiative though the strategies adopted by each of them varies from one country to the other. It is key to note that the common influence here that cannot be ignored has been the role of donor funds (InfoDev (2006). For instance, Bangladesh has benefited from over 15 years of successive donor projects, providing the opportunity to expand systems and upgrade specifications and software. Initially the system in Bangladesh relied on spreadsheets and relationship databases for data entry and storage. However, with the spread of internet service provision the different layers of the education system are turning to web-based solutions for data entry and storage. The benefit of such an approach is that data can become accessible at all levels of the education system and cost effective.

Nigeria's experiences on the other hand are more positive and provide lessons for larger developing countries, which have complex political systems and are about to reform their ICT infrastructure. For instance, the success registered in Nigeria can be attributed to the incremental approach that was used which involved implementation of a small scale pilot at the state of Kano as opposed to the introduction of a wide-scale national reform of the whole ICT system. This approach helped to identify and addressing the problems in a timely fashion before being scaled to the national level. There was need however, to conduct a needs analysis to identify the most appropriate architecture for the EMIS, resulting in the decision to develop a web-enabled system to support the collection, collation and reporting of school level data. This initiative presented a number of advantages such as low maintenance cost, a web-enabled system with ease of access, and the fact that one good computer, the server, is required.

In Kenya, considerable improvements have been made in as far as implementation of reforms in the education sector is concerned. Examples of such reforms and innovations include: the implementation of Free Primary Education (FPE) and Free Day Secondary Education (FDSE), which have accelerated enrollment of students in both primary and secondary schools in the country (Republic of Kenya, 2012). There is little doubt that these innovations have led to the improvement of access, retention, equity, quality, relevance, and overall efficiency of the education sector at national level (Odhiambo, 2010, Republic of Kenya/UNESCO, 2012). Despite these improvements, it is also key to note that the existing system in Kenya still faces a number of serious constraints which are yet to be resolved with the main challenge being the ability to mainstream them across the entire education sector. Such mainstreaming would favor the establishment of a professional and accountable management structure that can deliver better quality education services to all Kenyans, paying special attention to the needs of the poor.

2.4.2 Information Needs on Implementation of EMIS

Wako (2003) defines Information as an additional "knowledge" users employ to enhance planning, programming, monitoring, evaluation, review, research for overall management and decision making of educational development. Information has value only when there is a use for it and it's value depends on demand; the higher the demand for information,

the more value it has. Recent trends in the region driven by the desire to improve future EMIS development efforts as well as the increasing demand for data and information. This entails knowing the information needs of the users, the means of presentation to be used, including the level of aggregation, hence allowing the data set required for the information system to be defined. The 'best' sources of data have to be determined, considering accessibility of the source, reliability of the data, costs of collection, etc (Voigts, F. 1998).

Recent drive towards having increased community and parental involvement in schools has seen to the increase in demand for access to more relevant, reliable, unambiguous and timely data at lower levels. Also, increasingly local education units are developing their own information systems which could propel to the development of systems that meet the needs of educators at all levels. This will require much more attention to the alignment and integration of subsystems across levels and the development of data and information standards than has been the practice until now. (InfoDev, 2006)

Education for All (EFA) raises concerns about equality and equity and highlights the need for increasingly disaggregated and integrated data and information with which to monitor and compare development across states, municipalities, communities, schools and subgroups of students. Collecting and managing increasing quantities of disaggregated data will require more disciplined and systematic operational procedures and practices than has been the norm in countries in the past.

In the face of increasingly scarce resources and debatable results from years of reform, the demand for more timely data and information to support the effective and efficient investment of resources and to hold educators accountable for results is increasing in countries throughout the region. This demand is giving rise to calls for increased capacity for monitoring and evaluation of education projects, programs and policies; capacities which are not yet well developed in many countries in the region. The increasing demand for better data and information is a very promising development for EMIS. The lack of significant local demand for better data and information has often been cited, in assessments from around the world, as one critical explanation for why earlier efforts to build comprehensive, integrated EMIS have not been very successful.

Voigts, 1998 asserts that the existence of a good data set is demonstrated by the success achieved in meeting the information needs of the users. This implies therefore that the key requirement for a good data set is that it must be able to make it possible to collect and process the data set with available resources and that the data should be clean with no redundant data. A good case in point is the Namibia's Education Statistics reports which to a considerable extent meets the information needs of many users including ministries, stakeholders in education, academic institutions, the private sector, the broad public, international agencies and institutions, and donors and consultants. The statistics presented in the reports provide the exact information required and where this is not the case, or where the information is inadequate, it is often possible to extract the information from existing data. Ad-hoc requests for information which ideally requires ample time to respond, is the only limiting factor but this does not necessarily mean that data is not available. Another indication of the general adequacy of the data set is a significant decline in the number of special surveys conducted in schools to obtain any but very specialized information (Voigts, F. 1998)

Taking Nigeria as a case in point, the experiences and lessons are not so positive due to the fact that lack of valid or timely base-line data makes EMIS not to play a significant role in supporting planning processes at the national level. This could be attributed to the fact that probably the implementation by the Federal Ministry of Education using a national top-down approach could not work well and so resorted to supporting data collection at the state level. Through this process all states are provided with access to common software and a centralized depository to store data. At the state level stakeholders have been involved in construction of data collection instruments and there has been a deliberate attempt to ensure that private schools are involved in the process.

Kisumu East Sub County, just like Nigeria suffers remarkably in establishing concrete decision to manage education activities as in the case of Ghana above. This is evidenced by the disconnect that exists between the education managers at the central offices and the local school management hence leading to a top-down approach kind of decision making thereby compromising responsiveness to local needs.

2.4.3 Institutional Building and Capacity Development on Implementation of EMIS

The presence of appropriate systems, procedures and structures in institutions to enable them execute their functions and mandates effectively is what Institutional building entails while capacity development is refers to the professional and continual development of those working in an organization. These two components often suffer neglect from donors through lack of investment of enough resources or time, a fact which could impact negatively on EMIS sustainability in the long run. At present, government officials struggle with data integration and are deficient in the quantitative analysis skills needed to fully utilize the data from EMIS (InfoDev, 2006). As a result, more energy is spent in collecting than utilizing data, rendering the whole function of EMIS ineffective.

According to Lessen and Sorensen (2006), there are four key actions that could be taken by the administrator to ensure that EMIS successfully takes shape namely: ‘making the use of technology a priority; establishing a technological infrastructure; focusing on development and; creating training opportunities and support for students, faculty and staff’. Interdependency among different units and supporting a culture based on information use and sharing is what constitutes Institutional development. InfoDev (2006), further adds that this requires professionals to understand the way in which their unit interacts with other units and how this impacts on the performance of their country’s education system.

In order to operate and maintain EMIS at the organizational levels, it is imperative to ensure the people acquire the appropriate skills to oversee EMIS operations, hence institutional building. Pertaining to institutional development, Governments working with donors in some countries such as Nigeria, Namibia and Bangladesh, have supported the development of complex systems and procedures for data collection, and also invested considerable resources in ICT infrastructure to facilitate these processes. Despite advances being made in the former areas, relatively limited attention has been given to how EMIS outputs are disseminated or utilized in the policy process. This implies that donors and their partners automatically assume that EMIS outputs will be utilized in the policy process. This assumption is misguided, especially in the context of developing countries that are characterized by resource constraints, lack of institutional and human capacity, and where decision-making is often driven by short term political gain.

Developing countries have a huge task to reverse the above situation and ensure that decision making becomes more data driven. Improvement in the institutional capacity of units that produce and utilize EMIS outputs and also by ensuring that the manpower behind those units have competent skills to carry out their functions. Consequently, establishment of such conditions fosters the creation of a culture of information sharing, dissemination and utilisation, all of which will help encourage a sustained demand for EMIS outputs. Ghana provides an exemplary case to the approach of institutional development and capacity building by demonstrating how to encourage demands for EMIS outputs at different levels of the education system, but it has not been without difficulties. Perhaps the most significant of which is the fact that the operation of the Planning, Budget, Monitoring and Evaluation Unit relies on expatriate and part-time staff, bringing into question the long term sustainability of this unit. (InfoDev, 2006)

Conversely, In the case of Mozambique, Kenya and many other developing countries that have been grumbling with EMIS uptake; institutional building and capacity development have been accorded little attention let alone resources. Trainings that have been provided focusing on education data are not aligned or appear not to be linked with to any institutional change or reform policy. At the district level managers do not have relatively little understanding of indicators nor do they have access to collated or analyzed data since information only flows from district offices to the Ministry. Availability of adequate and relevant teaching and learning resources is very crucial in enhancing teacher effectiveness. When Kenya is singled out from the many countries that are trying to adopt EMIS, different statistics are prevalent from its budgetary allocations which still hinder the full realization of EMIS. For example, it (Kenya) spends only 4.2% of the recurrent primary education budget on non-teacher salary inputs (World Bank, 2008). Yet the amount of resources available for non-teacher salary items is a crucial factor for teachers to be effective. Studies suggest that books and other learning materials are highly cost-effective complementary inputs in the learning process. Other factors that influence education quality include teacher motivation, development and supervision, system management and school maintenance (Galabawa, 2003).

The supply of adequate and well trained teachers is a major determinant of quality of education and EMIS implementation for that matter. World Bank Development Report (2004) indicated the Pupil - Teacher Ratio (PTR) in Kenya to be around 30:1. However

there are wide disparities in teacher allocation and distribution across provinces, districts and schools. According to the MOEST and UNESCO (2005) study, Kajiado district had the highest PTR of 58:1 followed by Kisumu and Kwale with 44:1 and 42:1 respectively and Embu with the lowest PTR of 29:1 (Galabawa, 2003). These disparities have to be controlled and addressed for teachers' effectiveness to be realized thereby developing capacities for schools.

2.5 Economic Factors Influencing Implementation of EMIS

These factors influence the economic performance of EMIS structures within a nation. They relate to changes such as prices of goods and costs, interest rates and rates of inflation within an economy. Literature that has been discussed in this section focuses on thematic areas such as donor funding and budgetary allotment.

2.5.1 Donor Funding and Implementation of EMIS

According to the International Institute for Educational Planning [IIEP], (2006), EMIS have also been used to inform budget and resource allocation and to aid educational management, policy formulation, and local and global communication and collaboration (Hua & Herstein, 2003). EMIS development in most countries as seen in the earlier discussions in this literature review will no doubt continue to rely on the donor funding given the complex nature of the systems that come with it. Public-Private Partnerships (PPPs) are another possible and emerging source of support for EMIS development. The World Economic Forum (WEF)/UNESCO and USAID are currently exploring the use of PPPs as an approach to not only expanding ICT infrastructure in education, but also to building capacity for its use. PPPs is an option that could benefit EMIS funding if the move can be keenly pursued it could prove promising in the future but in the meantime donors and lenders continue to support EMIS but the support is not enough hence ways to fund more should be looked into especially in regards to the development and maintenance costs of EMIS in going forward. Serious thought and discussion of the longer-term funding challenges are required to assure sustainable EMIS development in the future. (Cassidy, 2006)

Funding that entails a single budget line for EMIS tends to have everything included in it thereby leading to longer specification and installation cycles that leads to increased risks that could perhaps see to the requirements on the ground changing before the system is

delivered. Atchoarena (1993) also notes that the ‘financing of education in small states does not escape the predominance of external aid’. Hence, whilst projects such as the EMIS are implemented from loans, there are limited financial resources to sustain them.

Support for institutional building and capacity development is also an area that warrants re-thinking by donors in relation to the above discussions. In our case studies there were isolated examples of best practice, but on the whole institutional building and capacity development tended to be neglected by donors and their partners. Moreover, when support was provided it failed to have the intended impact. Donors need to re-think support for these areas and remember that it takes several years to change an organizational culture and develop institutions with the type of structures and capacity to effectively utilize EMIS outputs. (InfoDev, 2006)

Once donor funding is withdrawn, there are significant problems that come with it such as creation of a dependency culture. In Nigeria for example, when donor funding for EMIS stopped in the late 1990s all data collection activities ceased, but when donor funding became available a couple of years later data collection activities also started again. Lack of continuity in data collection prevents time series analysis from being conducted and can also lead to reduce confidence in that data set. InfoDev (2006). In the past donors assumed that a top down approach to EMIS, starting with the information requirements of the Ministry, would respond to the needs of most developing countries. This assumption is probably derived from the EMIS experiences of North America and Western European countries where the development characteristics are totally different to those in the developing world.

Kenya and Kisumu East Sub County have also been victims of donor funding. There is a lot of reliance on donor funding to an extent that without the funds EMIS can't be sustainable. This is evident from the way EMIS implementation has been adopted by Kenyan government. A little allocation is provided to the MOEST to implement EMIS in schools, while focus is not being given to how the process will be achieved with less funding. Internet is not widely adopted as a primary mode of communication at all District EMIS centres. Most of the districts use Flash Drives, CD/DVDs and external hard drives for copying, back up and transmission of data to the Provincial EMIS cell for further compilation. Whereas some districts also use to generate hard copy reports to send

to the Provincial EMIS office for compilation. All this requires additional budget allocation to buy CDs/DVDs, external hard drives and other related stationary for transmission of data to the Provincial EMIS office and vice versa For instance in Kisumu East Sub County, there are very few Computers dedicated to doing EMIS functions, the staff working on EMIS are not well trained let alone being motivated to work. This scenario has led to a situation where EMIS initiatives have become stagnant due to lack of funds to support the process.

2.5.2 Budgetary Allotment on Implementation of EMIS

This section mainly dwells on the motivation behind EMIS implementers as well as government commitment to the whole process of data collection. Donors should not fund or support an initiative if the recipient government is not committed to the eventual ownership of the final product. Borrowing from a case study conducted in Nigeria, it is evident that the Federal Ministry of Education has no ownership, let alone commitment for any aspects associated with EMIS development process. As cited by InfoDev (2006), for instance, the Federal Ministry of Education was happy to support data collection activities over the 1994 to 1998 period, but when donor funding ceased so did the collation and analysis of census data. The FME only started data collection again when funding was available from the World Bank in 2002. The Federal Ministry has only funded the printing and distributing of the census.

Weakness has been noted in developing countries in as far as use of objective information is concerned. EMIS success solely relies on other important criteria such as securing funding and rewarding supports. Some managers perceive the use of EMIS as being correlated to rewards meaning that if there are no rewards associated with EMIS users then data might not be put to effective use. Ellison (2004) suggests that in order to promote staff motivation, it is important to provide exposure to international usages and challenges of EMIS, as well as successful implementation benchmarks that allow staff to gage potential impact and positive influences.

The use of capitation grant in Ghana as a case in point also served a platform for encouraging data collection for those involved with the EMIS process. This incentives formed for motivation. Under this process primary schools submit enrolment figures based on an assumption that pupils who completed a particular level of education would

also enter the system the next academic year. In return for submitting this information, a school will receive 50% of their capitation grant. The remainder of the grant will be received at the start of the new term when they submit actual enrolment figures. Clearly, there are merits in linking financial remuneration to the data collection, but this process requires careful checks and balances to ensure enrolment levels are not inflated to obtain higher payments. InfoDev (2006)

Despite the challenges being encountered in Kenya regarding the management and use of education resources, the education sector continues to receive the highest portion of the national budget. In spite of continuing to receive the highest percentage of budgetary allocation over the last decade, education quality in Kenya continues to remain a major issues across the entire nation even despite the launch of FPE and FDSE. Within the context of EFA and MDGs, the Government's policy is to enhance access, equity, quality and relevance but this has not been the case. However, this remains elusive at all levels of education and training. (MOEST, Sessional Paper 2012)

Regardless of the fact that the education sector in Kenya enjoys one of the highest portions of national budget, EMIS initiatives are still being compromised due to the lack of Government to establish a sustainable budget for EMIS or provide staff training for the optimal utilization of EMIS (Bhatti & Adnan, 2010). This largely frustrates the development and upkeep of EMIS has been a major hindrance in the sustainability of EMIS initiatives. Thereby leading to lack of exploration of output due to minimal use of technology-based data to create local-level education plans that fill the existing gaps shown by operational education indicators. Kisumu East Sub County, continues to receive little budgetary allocation and more of it is channeled towards other general schools expenses which is also not enough to carter for the increased number of primary students in public schools. This means in effect that little, if no funds are being directed towards the process of data collection and EMIS implementation at large.

2.6 Theoretical Framework

Following the research objectives, a number of questions emerged necessitated the researcher to interact with different stakeholders who are primarily EMIS users at different levels within Kisumu East Sub County. These included EMIS managers such as CQASOs, DQASOs and DEOs. The principal aim of this research was to test an

explanatory theory from the field work on the use of the EMIS in primary schools. Therefore this study was guided by the principles of diffusion theory. The Diffusion of Innovation Theory was first discussed historically in 1903 by the French sociologist Gabriel Tarde (Toews, 2003) who plotted the original S-shaped diffusion curve, followed by Ryan and Gross (1943) who introduced the adopter categories that were later used in the current theory popularized by Everett Rogers.

According to Medlin (2001) and Parisot (1995), Rogers' diffusion of innovations theory is the most appropriate for investigating the adoption of technology in higher education and educational environments. In fact, much diffusion research involves technological innovations so Rogers (2003) usually used the word "technology" and "innovation" as synonyms. Rogers (1962) distinguished five categories of adopters of an innovation: innovators, early adopters, early majority, late majority, and laggards. Within this theory, the goal is not to move people within the five adopter categories into another category, but to streamline the innovation to meet the needs of all five categories. For Rogers (2003), adoption is a decision of "full use of an innovation as the best course of action available" and rejection is a decision "not to adopt an innovation". This theory was deemed best in finding explanations to the theory on the factors that influence the slow implementation of EMIS in Kisumu East Sub County.

Strengths of the diffusion theory are firmly grounded on the characteristics of innovations that are as follows: relative advantage, compatibility, complexity, trialability, and observability. According to Rogers (2003), "individuals' perceptions of these characteristics predict the rate of adoption of innovations".

The approach that the researcher used to investigate the factors that influence the implementation of EMIS in Kisumu East Sub County as a technological innovation has been outlined theoretical framework outlined in this section.

2.7 Conceptual Framework

The study is guided by the following conceptual framework showing interplay among variable in the study.

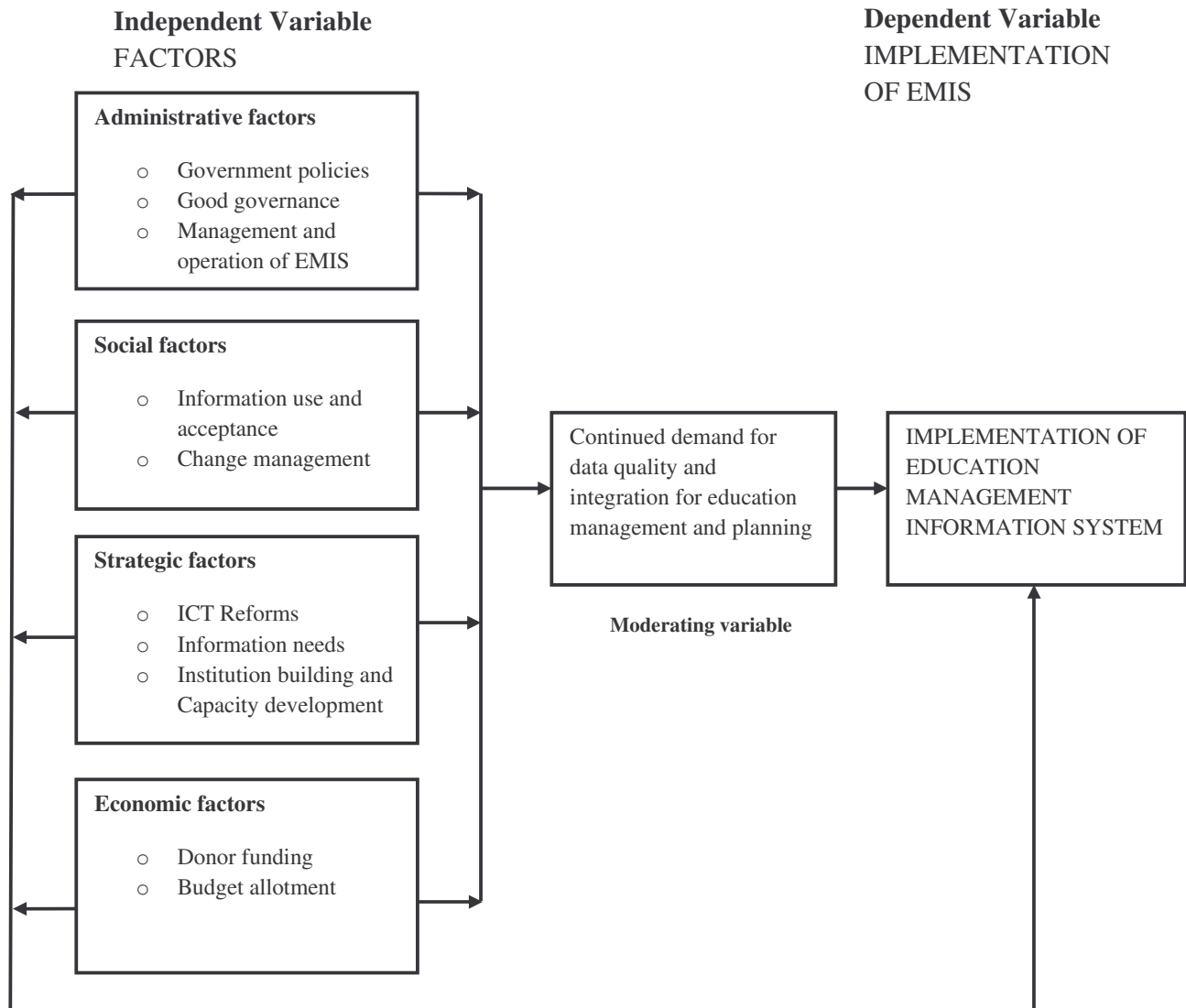


Figure 2.1: Conceptual Framework

This section interprets the conceptual framework by examining its components. The components have been divided into four thematic areas: administrative factors, social factors, strategic factors and economic factors. The interpretation is based on the issues that are fundamental to the implementation of EMIS as captured under each component. The relationship between the variables in the conceptual framework above shows the dependent variable, implementation of EMIS as affected by the independent variable,

factors influencing implementation of EMIS. These factors are Administrative factors which are further divided into three indicators; Government policies, Good governance and Management and operations of EMIS. The second factor is Social factors which is further divided into Information use and acceptance and Change management. The third factor is Strategic factors which is further divided into ICT Reforms, Information need and Institution building and Capacity development. Lastly, there is the Economic factors which is divided into Donor funding and budgetary allotment.

There is a direct effect of the independent variable (factors) discussed above on the implementation of EMIS in schools as appertains this study. This is through ensuring that all the administrative, social, strategic and economic factors stated above and the underlying components under each of them is prevalent or available if EMIS implementation is to be effective in schools. Each of the factors depend on each other and the relationship between the factors is strong such that one or two factors alone cannot fully sustain the full implementation and realization of EMIS and therefore a correct balance of the components under each factor has to be attained for EMIS implementation to be realized. McHugh (2007) asserts therefore that, a practical means of enhancing the EMIS is to find ways of strengthening both the practice of record keeping at schools and the processes and tools involved in collecting those records from schools

Effective EMIS implementation and use is measured by realizing equal distribution of financial resources to schools, increasing vote heads per child through FPE such that the amount allocated per child is sufficient to ensure effective learning and thereby promote school retention rates. Availability of relevant and timely data also enables efficiency in decision making process thereby enabling the timely disbursement of FPE funds to schools which propels school's operations. This is in line the statement that careful management of the data supply chain is essential to the collection and dissemination of the quality of data (Cassidy, 2006, McDonald et al., 2007). Improved accountability and transparency in school management structures can also be realized if proper governance systems are placed and practices at the school level. Therefore, the emphasis on improved data for decision making has arisen from the explosive growth in the size of the education system in the MOE, from the increased demand of society for quantitative data due to pressures of accountability (Farnsworth, 2002, Harvey, 2004), and from the increased

complexity of education systems as the MOE undertakes more complex programs and pursues multiple objectives (Chapman, 1991).

It is also worth noting that it is important to focus on user's needs and expectations and that both the external and internal users of information are central to EMIS functions and management as well as on the quality output. An increased use of educational information leads to increased, informed decision making. In addition, quality products increase the number of users. This, in turn, leads to an increased use of information which, again, leads to an increased level of informed decision making (Wako, 2003). On the strategic factors, information needs accompanied by elements such as ICT reforms as well as institutional building and capacity development should be well balanced and interconnected if implementation of EMIS is to be realized. A good information system is about effective communication and information flows; information needs to flow up to decision makers and down to action takers equally and smoothly (McHugh, 2007).

The moderating variable for the framework stipulates the need for integrating quality data which is beneficial to all users both internal and external if EMIS implementation is to be realized. The continued demand for quality data from schools as well as the need to integrate the data collected, remains critical to policy makers and planners in as far as education management is concerned. Data integration is one of the most important factors in EMIS development strategies (Education, 2006). The integrations add value to the collected data and must happen before policy analysis (Chapman, 1991). This means therefore that a data integration strategy has to be implemented for the integrated data to be used. Hence there cannot be an effective EMIS without a properly coordinated management.

2.8 Summary of Reviewed Literature

With the literature reviewed both globally and locally, it is evident that there still lie gaps in decision making process through EMIS for better management of primary schools thereby making this research significant. Technology isn't necessarily the indicators of successful EMIS but rather the successful of EMIS is more about organizational change and development and capacity building and human resource development. Having a systematic approach to EMIS is of more importance than balancing attention to the technical issues with serious and significant efforts to build end-user skills. Addressing

the organizational issues that have over the years constrained EMIS development is equally of key importance.

Substantial research has been discussed in this section regarding the perspectives of different authors on factors that influence the effective implementation of EMIS. The literature reviewed reveals that most studies have dwelt on how quality data can be achieved in an accurate and timely fashion so as to support decision making while others have dwelt on how data can be integrated to a single source such that all users can benefit from it for education planning and management. For example, a study carried out by InfoDev (2006) that focused on understanding how the widespread use of ICT can help countries meet Education Millennium Development Goals (MDGs) as well as providing policy makers and donors with a coherent understanding of EMIS performance, especially with regard to how data is collected, disseminated, utilized along with issues associated with managing these processes and transparency.

Chapman (1991) also examined the extent to which ministry level decision makers in five developing countries had confidence in the quality of the national level education data available to them, the extent that respondents' judgements of data quality were consistent with more objective analyses of the accuracy of selected national level data, and the reasons to which ministry officials and headmasters attributed inaccuracies in the data. From this study, it was evident great importance is assigned to numeric data by both government and school officials but they believe their national data shows error rates ranging from 16 to 40 per cent. There was low correspondence between respondents' perceptions of data quality and the more objective measures of data quality available in three of the countries. The source of error was widely thought to be failure at the school level to make accurate records or returns.

This research therefore was significant in the sense that it went beyond looking at one item or narrowing down to a particular aspect as the reason for poor implementation of EMIS but proceeded further to review and evaluate different literature concerning several factors that are underpinning effective implementation of EMIS at school level and different mechanism for improving the system as cited by different authors. The framework approach in this report was based on the different factors that influence the implementation of EMIS and how each of the factors should be managed.

CHAPTER THREE

RESEARCH METHODOLOGY

3.1 Introduction

This section focuses on the methodology that the researcher used in obtaining data from the respondents. It covers research design, target population, sample size and sampling procedures and design. Other components such as research instruments, pilot testing, reliability and validity of the instrument and data collection procedures that the researcher employed in meeting the study objectives have been discussed at length. Data analysis techniques and ethical considerations have also been highlighted.

3.2 Research Design

Descriptive survey design was used in this study. According to Orodho (2003), this is a method of collecting information by interviewing or administering a questionnaire to a sample of individuals. The design was appropriate as it favoured the presentation of data in a meaningful way thereby creating a good platform for further probe and research. The design was also a good fit for the study as it accorded the researcher a profile of the relevant aspects from both the individual and organizational perspectives in as far as the phenomena of interest was concerned. This research design was therefore relevant for the study as it also enabled the researcher to take control over the research process (Saunders, *et .al*, 2007).

3.3 Target Population

This refers to a population as a group of individuals, objects or items from which samples are taken for measurement, Kombo and Delmo (2006). The target population for the study was 150 primary school Head teachers and Deputies in Kisumu East Sub County from which a sample was drawn. Given the large numbers of workforce that make up for the primary school head teachers in the entire Kisumu County among other constraints; it was not possible to cover all the targeted population of 150 primary school Head teachers and Deputies that make up the entire Kisumu East Sub County. In this regard therefore, the basis for this study comprised of 126 primary school Head teachers and Deputies from both public and private schools who were directly involved in the collection of information for the MOE for planning purposes. Interviews were also conducted on Ministry official such as the DQASO and the CQASO in charge of the Kisumu East Sub

County so as to ascertain the heterogeneity and homogeneity of the collected data. Given their unique position of involvement in the phenomenon, their direct experience with the phenomenon of interest as well as their ability to describe their experience, made the MOE officials be chosen as part of the study respondents.

3.4 Sample Size and Sampling Procedures

The sample size for this study comprised of 63 primary schools within Kisumu East Sub County which translated to 126 Head teachers and Deputies as the study targeted 2 respondents from each school i.e. the Head teacher and the Deputy Head teacher. Sampling procedures have been discussed at length in the section below.

3.4.1 Sample Size

Babbie (2001) notes that working with a sample reduces the length of time needed to complete research, cuts cost, is manageable and is almost a mirror of the entire population. In this study, Yamane’s formula (1967:886) was used to reach at the sample size. Using the formula, with a confidence level of 95% and a precision of 0.05, a total number of 63 schools was arrived at as indicated below:

$$n = \frac{N}{1 + N(e)^2}$$

N = population size (75 schools)

e = level of precision (0.05)

n = sample size

Hence

$$\frac{n = 75}{1 + 75 (0.05)^2} = 63 \text{ Schools as the sample size.}$$

3.4.2 Sampling Procedure

Sampling is the selecting of elements from a population in a way that the elements selected represent the entire population (Orodho, 2005) .Purposive sampling technique was used to select Kisumu East Sub County as a sub county where the study was

conducted. This was due to the fact that the Sub County had initially benefitted from a Digital EMIS study courtesy of MOEST in 2014 and so most of the school Heads were informed of EMIS structures.

School head teachers and their Deputies were also selected using purposive sampling technique. The assumption here was that the variable under investigation were experienced by all school head teachers and deputies. There are a total of 75 public and private primary schools in Kisumu East Sub hence, when applying Yamane's formula (as indicated above), a sample size of 63 schools was arrived at which gave the actual number of schools that were to form the sample size within Kisumu East Sub County.

Proportionate sampling method was used to select 63 schools from a total of 75 that could fit the study from the 4 zones that make up the Sub County. Under proportionate method, Head teachers and their Deputies were selected equally from the Kisumu East Sub County zones such that all zones had to have an equal representation. From the 63 schools, each school had both the Head teacher and the Deputy Head teacher targeted for the interviews which saw to the data collection from 126 respondents. The respondents were selected by the virtue of their role as part of the school management and administration who are mandated by the Government to oversee school operations and are custodians of school information. Hence purposive sampling was preferred by the researcher because it helped to target the direct sources of EMIS information and also sampling the entire County would be prohibitively expensive and time consuming.

3.5 Research Instruments

Questionnaire supports easy analysis, it's reliable and consumes less time hence it was the most preferred instrument for data collection. Data from 126 respondents (Head teachers and Deputies) in 63 public and private primary schools was collected using the questionnaire. The questionnaire had 2 main sections. Section 1 which highlighted the background information of the respondents while section 2 contained the factors influencing the implementation of EMIS in schools. The contents of the questions mainly focused on the influence of government policy, good governance, management and operation of EMIS, informational technology use, change management, ICT reforms, information needs, institutional building and capacity development, donor funding and budgetary allotment on the slow implementation of EMIS in primary schools.

The questionnaire was administered by the researcher assisted by two trained research assistants. A mix of open and closed ended questions were contained in the questionnaire to generate more information on the subject matter of study. Since, questionnaires are quantitative data collection tools; the data that was collected was mainly quantitative in nature. Instructions to the research assistants administering the questionnaire were included to guide the collection of reliable and valid data and the principles of confidentiality and informed consent were equally adhered to. Key in-depth interviews to key informants was also done. These key informants included the County Quality Assurance and Standards Officer, the Kisumu East Sub County D.Q.A.S.O, the Examinations Officer and 1 registry officer (Clerk). These interview schedules were administered by the researcher alongside his trained research assistants. These interview schedules were used to gather qualitative data for triangulation and for in-depth understanding of the phenomenon under study.

3.5.1 Pilot Testing

A questionnaire should be tested on a pilot sample of members of the target population (Kelley et al., 2003). It is a useful method for addressing quality issues such as focusing on increasing the validity and reliability of measures and items, and decreasing bias and measurement error (Tarver and et al., 1995). A pilot study was conducted on a few respondents at the neighboring County Education Office of Kisumu West Sub County. To reduce any cases of ambiguity, questionnaires were revised accordingly since the study involved self- administered type of data collection instruments. 6 Head teachers and 4 Deputies were selected randomly and 2 KII's were also conducted at the same site.

This helped to increase the reliability, to detect any weaknesses in the design and instrumentation as well as evaluate the length of time taken to administer the tool. Kisumu West sub County was chosen because it substantially shared characteristics with the actual study area. These characteristics included poor infrastructure in schools that do not support EMIS initiative such as lack of electricity, untrained staff on EMIS operations, inadequate resources allocated to the schools due to delays and time lags experienced in submitting data from schools to the central EMIS etc.

The pilot-testing adopted the sampling procedures and techniques guiding the main study. Any problems noted at this stage such as vagueness, lack of clarity, repetition and length of time among others helped the researcher to review, redesign or adjust the question in such a manner as to make the tool clear and free from vagueness. The corrected instruments were then re-tested to ensure that they were clear and effective before proceeding to the main study. Kothari (2003), advocates that 10% of the population is sufficient for piloting studies and therefore the pilot study was carried out on the 12 respondents from the 126.

3.5.2 Validity of the Research Instrument

Content testing and validity construction of the research instruments was a vital step in ensuring that the research instrument produced the relevant responses for the study. This was done before the actual process of data collection. Experts of research should identify the validity and reliability of the research instruments (Cohen et al, 1999). In this regard therefore content validity was done by at least two experts from the MOE who were not a part of the study sample but possessed commendable experience in data collection related to educational planning and management. The relevance for this process was to assess the instruments for collecting data as well as identify any anomalies likely to be encountered during the actual data collection process. It also helped to ascertain that the instructions were clear and understood by the targeted respondents.

3.5.3 Reliability of the Research Instrument

Reliability is the degree to which an instrument produces stable and consistent results. A pilot study to assess the reliability of the instrument was also carried out on a few respondents at the Kisumu West Sub County Education office to detect any weaknesses in the design and instrumentation. Random errors that could possibly reduce reliability were minimized by giving clear instructions to the respondents and coding the questions accurately. Reliability was carried out using test-retest method whereby the 12 questionnaires were administered to the 10% of the population. Then later after 2 weeks, administration of the same questionnaire to the same respondents was done. Correlation of the results was done using Pearson Product Moment Correlation. A correlation of 0.8 was obtained which was also significant. This is above, 0.7 recommended reliability for the instrument thus the instruments were reliable.

3.6 Data Collection Procedure

This was done through a set of structured questionnaires which were administered to 126 head teachers and deputy head teachers of the targeted schools within Kisumu East Sub County whose mandate is to collect data/information on behalf of the Central EMIS and submit to the Ministry on termly basis for planning purposes. CQASO and DQASOs as education experts were also part of the In-depth interviews so to ascertain the information collected from the school heads. Observations also applied in cases where there was need. Primary data was collected by the researcher with the help of 2 research assistants using sets of structured questionnaire to 126 respondents who were either the Head teachers or Deputy Head teachers in charge of EMIS data collection in their respective schools.

3.7 Data Analysis Technique

Both qualitative and quantitative data was collected in this study. Analysis of Qualitative data was done using descriptive statistics that included mean, standard deviation and correlation analysis. In reference to the two variables at hand, correlation analysis was used to obtain a measure of the degree of association. In order to find out the influence of the four independent variables on the dependent variable, regression analysis was also carried out. Reason for selecting this approach was because descriptive methods are perceived to be stronger in validity but weak in reliability whereas inferential statistics tend to be stronger in reliability but weak in Validity (Kibwage, 2002 & Odondo, 2007). The use of both methods aids the researcher in gaining higher degree of reliability and validity (Babbie, 1986).

3.8 Ethical Considerations

The researcher needs to be clear about how the ‘purpose of the research, the information provided to participants, the methods of data collection and analysis as well as the proposed means of dissemination of findings are all based on ethical principles’ (Smyth and Holian, 2008) . Following this statement therefore, ethical consideration were adhered to in this study by undertaking tasks such as: communicating the purpose of the research upfront to participants and explaining their role in the research (Portelli 2008), obtaining consent from the relevant authorities and participants as well as providing all participants with information about the research before its commencement. Selecting methods of data collection and analysis which allowed the researcher to obtain detailed

first hand and authentic information from the participants was also done and finally writing the findings so that they are representative of the participants' voices.

Protection of information from unauthorized observation as well as notification of participant of any unforeseen findings were also ethics that the study was sensitive to.

CHAPTER FOUR

DATA ANALYSIS, PRESENTATION, INTERPRETATION AND DISCUSSION

4.1 Introduction

The main purpose of this study was to investigate the factors influencing the implementation of Education Management Information System. This chapter discusses the thematic areas of the study findings in line with the study objectives. The thematic areas include; administrative, social, strategic and economic factors in relation to the implementation of EMIS in Kisumu East Sub County. These results have been summarized in the following sub sections.

4.2 Questionnaire Response Return Rate

The information entails the respondents that gave the full information concerning the questions asked in the questionnaire. Head Teachers, and Deputy Head teachers were approached and the response return rate presented as shown in table 4.1

Table 4.1 Response Return Rate

Respondents	Response	Percent
Head teacher	58	92.06
Deputy head teacher	57	90.48
KII	4	100
Total	119	94.44

The results shown in table 4.1, indicates that there was a high and recommended response return rate. For the head teachers, there were 58(92.06%) of the responses, 57(90.48%) for the Deputy Head teachers and 4(100%) for the KII. The overall response return rate was 119(94.18%), thus indicating that the response was reliable and the views given were in line with the questionnaire given to a high percentage.

4.3 Demographic information of the Respondents

The respondents were asked to indicate their gender, title- which entailed Head teacher or Deputy Head teacher, level of education, and number of years they had served in order to establish their demographic information. The results for these characteristics are tabulated below in table 4.2.

Table 4.2 Demographic Data of the Respondents

Demographic Characteristics	Category	Frequency	Percentage
Gender	Male	67	58.3
	Female	48	41.7
Total		115	100.0
Title	Head Teachers	58	50.4
	Deputy Head Teachers	57	49.6
Total		115	100.0
Education Level	Diploma	48	41.7
	Degree	27	23.5
	Masters	15	13
	Others	25	21.7
Total		115	100.0
Number of years Served	1-2 years	36	31.3
	3-4 years	14	12.2
	4-6 years	21	18.3
	above 6 years	44	38.3
Total		115	100.0

From the results in table 4.2, analysis of the results on gender distribution shows that most of the Head Teachers and Deputy Head teachers in the Sub-County are males 67(58.3%). Concerning the respondent's designation, 58(50.4%) of the respondents were Head Teachers while 57(49.6%) were Deputy Head Teachers. On the other hand, 48(41.7%) of the Head teachers and Deputy Head teachers in public primary schools in Kisumu East Sub County are diploma holders, 27(23.5%) are bachelor's degree holders while 15(13.0%) are master's degree holders. The rest had other qualification apart from the ones mentioned, 25(21.7%). Finally, the results revealed that according to the sampled respondents, most of the Head teachers and their Deputies had served for more than 6 years, 44(38.3%), 36(31.3%) had served between one and two years, 21(18.3%) had served between four to six years and 14(12.2%) had served between three and four years.

4.4 Implementation of EMIS

Before examining the factors that influenced the slow implementation of EMIS, there was need to measure the extent to which EMIS was implemented. The variables that composed of implementation of EMIS were: support for education management by the government; improvement of learning policies by the government; improvement of the accountability and transparency; commitment of the DEOs office; collection of sufficient data for decision making and management; satisfaction with sources used to make decisions to support activities in school; improvement of innovation through ICT. These were presented, interpreted and discussed as per the sub themes.

4.4.1 Extent of Implementation of EMIS.

Respondents were asked to share their views on a five point Likert scale starting with strongly disagree to strongly agree. This was in order to establish the extent of EMIS implementation. Some of the main statements which were used to indicate the measuring of the level of implementation included formulation of new policies by the government to support education, improvement of learning conditions by the government policies, improvement of accountability and transparency, sufficient data collection for decision making, ability to change and adopt to new technology among other factors. The results were presented using means and standard deviations as shown in table 4.3.

The key used was: **VLE-Very large extent, LE-Large extent, ME- Moderate extent, SE-Small extent, VSE-Very small extent, M-Means, SD-Standard Deviation.**

Table 4.3 Extent of Implementation of EMIS.

Factors Determining Extent of Implementation	VLE	LE	ME	SE	VSE	M	SD
Government has for the recent years supported education management by formulating new policies to improve learning outcomes	5(4.20)	10(8.40)	34(28.57)	19(15.97)	51(42.86)	3.85	1.14
Government policies have helped improve learning conditions in school	18(15.13)	8(6.72)	33(27.73)	19(15.97)	41(34.45)	3.48	1.05
Accountability and transparency has improved as a result of EMIS application in schools	26(21.85)	8(8.40)	29(24.38)	16(13.45)	40(33.61)	3.3	1.13
Commitment of DEOS office has highly implemented EMIS activities in schools	26(21.85)	10(8.40)	29(24.37)	16(13.45)	38(31.93)	3.25	1.07
Data collected from schools is sufficient for decision making and management of schools	3(2.52)	8(6.72)	23(19.33)	17(14.29)	68(57.14)	4.17	0.98
I am satisfied with sources used to make decisions to support activities in my school	19(15.97)	14(11.76)	32(26.89)	19(15.97)	35(29.41)	2.31	1.2
Innovation through ICT has improved EMIS application and use in school	27(22.69)	11(9.24)	27(22.69)	16(13.45)	38(31.93)	3.23	1.08
I can change and adopt to any technology that can improve EMIS process	2(1.68)	9(7.56)	25(21.01)	15(12.61)	68(57.14)	4.16	1.21
Schools are ready to accept new policies that can improve education standards in schools	3(2.52)	9(7.56)	7(5.88)	24(20.17)	76(63.87)	4.35	1.12
Government has implemented the procedures for providing electricity and ICT equipment to schools	5(4.20)	13(10.92)	40(33.61)	16(13.45)	45(37.82)	3.7	1.38
In general how would you rate the impact that ICT can improve education quality	87(73.11)	3(2.52)	7(5.88)	2(1.68)	20(16.81)	1.87	1.1
Education making process is not effective due to delays experienced from the time schools submit data to the time data is able to be used	16(13.45)	9(7.56)	31(26.05)	17(14.29)	46(38.66)	3.57	1.4
Current decision making process done by MOEST is based on up to date statistics	20(16.81)	10(8.40)	30(25.21)	17(14.29)	42(35.29)	3.43	1
Training organized by MOE for education purposes are well organized and of good quality	34(28.57)	8(6.72)	26(21.85)	16(13.45)	35(29.41)	3.08	0.97
Both donor and the government work hand in hand to support EMIS activities in schools	5(4.20)	10(8.40)	34(28.57)	18(15.13)	52(43.70)	3.86	1.07
My effort in EMIS activities are unrewarded i.e. not recognized	23(19.33)	8(6.72)	30(25.21)	18(15.13)	40(33.61)	3.37	1.52
Total	20(16.81)	8(6.72)	33(27.73)	17(14.29)	41(34.45)	3.43	1.15

Table 4.3 results indicates that the implementation of EMIS is to a moderate extent as reflected by a mean of 3.43, which is within the range of 3.0 to 3.49 though there were variations in the feedback that was given, (SD=1.15). This implies that there is still much to be done on the implementation of EMIS as reflected in the results. The only areas, where the extent of implementation of EMIS was high were few, particularly those with means above 4.0. These included data collection in schools, which the deputy teachers and head teachers felt that it was sufficient for decision making and management of schools (M=4.17, SD=.98). It also emerged, as the second aspect, that deputy teachers and head teachers were flexible to adapt to any technology that would improve EMIS process (M=4.16, SD=1.21), which is a step towards implementation of EMIS. Furthermore, schools were ready to accept new policies that can improve education standards in schools, (M=4.35, SD=1.12). On the other hand, there were few aspects that drag behind the implementation of EMIS. These included rating the impact of ICT on improvement of the implementation of EMIS (M=1.87, SD=1.10), and satisfaction with the sources used to make decisions to support activities in school, (M=2.31, SD=1.20). The general outcome reflects that the extent of implementation of EMIS was moderate and therefore there is much to be done on the same.

4.5 Factors Influencing the Implementation of Education Management Information System.

These factors involved administrative factors; under which various sub-factors were presented and these were: government policies, good governance, and management and operation of EMIS. These were presented as shown in the following subthemes as per the objectives of the study.

4.5.1 Administrative Factors and Implementation of Education Management System

To establish the influence of government policies under Administrative Factors on the implementation of Education Management Information System, Deputy Teachers and Head teachers were asked to share their information on various factors encompassing implementation of management information system under administrative factors. These included government policies, good governance, and management and operation of EMIS.

4.5.1.1 Government policies

This entailed a few aspects that were considered to be in line with the government policies. Therefore respondents were asked to share their views on a five point Likert scale starting with strongly very small extent to very large extent. These included operational planning of EMIS data, data driven government policies to support education, organizational internal efficiency among others. The first results for frequency counts and percentages are presented as shown in table 4.4 on a five point Likert scale.

Table 4.4 Government Policies.

KEY: VSE-Very Small extent; SE-Small extent; ME-Moderate extent; LE-Large extent; VLE- Very Large extent

Variable	VSE	SE	ME	LE	VLE	M	SD
EMIS data helps in operational planning by the government for both county and national development?	7(6.1)	14(12.2)	28(24.3)	46(40.0)	20(17.4)	3.50	1.103
Government policies that support education are data driven and help in performance management	8(7.0)	10(8.7)	15(13.0)	41(35.7)	41(35.7)	3.76	1.152
Internal efficiency in organizations such as schools is likely to be improved through government policies	41(35.7)	27(23.5)	41(35.7)	4(3.5)	2(1.7)	2.14	1.042
Government policies in relation to education and planning and management are important	86(74.8)	23(20.0)	3(2.6)	1(0.9)	2(1.7)	1.35	.738
I would support data driven policies aimed at improving operational planning at school	17(14.8)	5(4.3)	7(6.1)	29(25.2)	57(49.6)	3.90	1.439

From the results in table 4.4, it is clear that EMIS data helps in operational planning by the government for both county and national development to a large extent as reported by the majority of the Deputy teachers and Head teachers, 46(40.0%). Government policies that support education are data driven and help in performance management to a very large extent as well as seen by the majority, 41(35.7%). It therefore emerged that most of these school heads and deputy head teachers would, to a very large extent support data driven policies aimed at improving operational planning as seen reported by 57(49.6%). However, internal efficiency in organizations such as schools is likely to be improved to a very small extent through government policies, 41(35.7%) and also, government policies in relation to education and planning and management were important to a very small extent as observed by the Deputy teachers and Head teachers, 86(74.8%).

4.5.1.2 Good Governance

The second factor under Administrative Management was good governance, under which various aspects were involved. These included Deputy teachers and Head teacher's satisfaction that EMIS data can improve accountability and transparency in schools, extent of their involvement in decision making, involvement in the preparation and implementation of school improvement plans, attendance of meetings related to EMIS, and accessing information regarding school operations in the sub-county and county levels. The scale used to measure the views was a five point Likert scale with the lowest point being very small extent and the largest being very large extent. The results were presented in frequency count and percentages as shown in table 4.5.

Table 4.5 Good Governance

KEY: VSE-Very Small extent; SE-Small extent; ME-Moderate extent; LE-Large extent; VLE- Very Large extent

Extent of influence of good governance on EMIS	VSE	SE	ME	LE	VLE	M	SD
Satisfaction with the use of EMIS data to improve accountability and transparency	65(56.5)	38(33.0)	2(1.7)	6(5.2)	4(3.5)	1.66	1.00
Involvement in decision making	14(12.2)	13(11.3)	26(22.6)	48(41.7)	14(12.2)	3.30	1.19
Involvement in preparation and implementation of school improvement plans	3(2.6)	31(27.0)	78(67.8)	3(2.6)	3(2.6)	2.76	.67
Attendance of meetings related to EMIS	18(15.7)	60(52.2)	20(17.4)	6(5.2)	11(9.6)	2.41	1.12
Access to information regarding school operations in sub-county and county levels	20(17.4)	5(4.3)	16(13.9)	2(19.1)	52(45.2)	3.88	1.58

The results in table 4.5 indicate that majority of the Deputy teachers and Head teachers were dissatisfied with the use of EMIS data to improve accountability and transparency in schools to a very small extent, 65(56.5%), while their involvement in decision making was to a large extent as seen by the majority,48(41.7%). Preparation and implementation of school improvement plans was also to a moderate extent as reported by the majority, 78(67.8%). Attendance of meetings related to EMIS was also to a small extent, 60(52.2%), while access to information regarding school operations in sub-county and county levels was achieved to a very large extent at, 52(45.2%).

4.5.1.3 Management and Operation of EMIS

The third factor under Administrative Management is management and operation of EMIS, under which various aspects were involved .These included Deputy teachers and Head-teachers rating on; the current data collection tools currently used to capture EMIS data, how often they use EMIS data in day to day decisions, how often someone from the DEO's office visited the school since January 2015,if EMIS information collected by the school to MOEST for planning purposes was impactful, how they access data from EMIS, and sources of information used to make decisions to support education activities. A five point Likert scale starting from strongly disagree as the lowest point to strongly agree as point five was used. The results were presented in frequency count and percentages as shown in table 4.6.

Table 4.6 .Management and Operation of EMIS.

KEY: SD-Strongly Disagree; D-Disagree; N-Neutral; A-Agree; SA-Strongly Agree

Extend of influence of Management and Operations on EMIS	SD	D	N	A	SA	M	SD
Rating on the current data collection tool used to capture EMIS data.	3(2.6)	32(27.8)	57(49.6)	16(13.9)	7(6.1)	2.95	0.89
Use of EMIS data in making day to day decisions in the management of schools	14(12.2)	18(15.7)	41(35.7)	34(29.6)	8(7.0)	3.03	1.11
Officer who visited school on EMIS	10(8.7)	3(2.6)	36(31.3)	52(45.2)	5(4.3)	3.42	0.95
How often has someone from DEO's office visited your school	16(13.9)	29(25.2)	16(13.9)	48(41.7)	6(5.2)	2.99	1.20
How EMIS information collected by schools to MOEST was impactful	45(39.1)	45(39.1)	6(5.2)	15(13.0)	4(3.5)	2.03	1.14
Access of data from EMIS	1(0.9)	16(13.9)	52(45.2)	5(4.3)	34(29.6)	3.58	1.13
Sources of information used to make decisions to support education activities	28(24.3)	24(20.9)	26(22.6)	33(28.7)	4(3.5)	2.65	1.22

The findings in table 4.6 indicate that majority of the Deputy teachers and Head teachers rated the current data collection tools as good as agreed by 57(49.6%) , while the use of EMIS data in making day to day decisions in the management of school operations was to a moderate extent,41(35.7%). Whereas the officers from the DEO’s office visited the schools since January 2015 more than three visits, 52(45.2%). The EMIS information collected by the school to MOEST for planning purposes was impactful by 45(39.1%), as the access of data from EMIS was by digital access via internet, 52(45.2%).The sources of information used to make decisions to support education activities were DEB Records, EMIS and school request 33(28.7%).

In addition to these findings, to establish whether there was a relationship between administrative factors and implementation of EMIS, Pearson correlation coefficient was used so as to test the hypothesis that there is a high influence of administrative factors on the implementation of EMIS. The results are presented as shown in table 4.7.

Table 4.7 Correlation between Administrative factors and Implementation of EMIS.

		Implementation of EMIS
Government Policies	Pearson Correlation	.383 ^{**}
	Sig. (2-tailed)	.000
Good governance	Pearson Correlation	.233 [*]
	Sig. (2-tailed)	.008
Management and Operation of EMIS	Pearson Correlation	.159 [*]
	Sig. (2-tailed)	.049

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

The results in table 4.7, indicates that there is a relationship between each of the administrative factors and the implementation of EMIS. First, government policies positively and significantly correlated with implementation of EMIS, (r=.383, p<.05), good governance, (r=.233, p<.05) and finally management and operation of EMIS, (r=.159, p<.05). Therefore we reject the null hypothesis and adopt the alternative hypothesis that there is a low influence of administrative factors on the implementation of

EMIS. This implies that implementation of EMIS had a very low association with administrative factors.

Standard multiple regression models were therefore carried out to find the influence of administrative factors on the implementation of EMIS. The coefficient results are presented as shown in table 4.8 below.

Table 4.8 Regression of Administrative factors on Implementation of EMIS.

Model		Unstandardized Coefficients		Standardized Coefficients		
		B	Std. Error	Beta	t	Sig.
1	(Constant)	2.081	.359		5.802	.000
	Mean of administrative factors	.476	.125	.337	3.803	.000

a. Dependent Variable: Implementation of EMIS

From the results in table 4.8, it is clear that administrative factors had a unique significant influence on implementation of EMIS, ($\beta=.337$, $t(115)=3.8$, $p<.05$). This implies that while controlling for other variables, administrative factors uniquely influenced implementation of EMIS. One standard deviation in administrative factors led to one unit change in implementation of EMIS.

A summary result for the percentage change in the implementation of EMIS accounted for by administrative factors was presented as shown in table 4.9.

Table 4.9 Summary Model for Percentage Explained by Administrative Factors.

Model	R	Adjusted R Square	Std. Error Change Statistics			df1	df2	Sig. Change	F
			of Estimate	the R Change	Square F Change				
1	.337 ^a	.113	.106	.43060	.113	14.460	1	113	.000

a. Predictors: (Constant), Mean of administrative factors

From the results in table 4.9, administrative factors explained 10.6% change in the implementation of EMIS, (adjusted R square=.106, $F(1, 113)=14.460$, $p<.05$). It is thus

clear that any change in the implementation of EMIS is associated with administrative factors.

Further interview with the KII officers revealed results closely related to the present empirical findings. An interview with one of the KII officer who was a CQASO officer by designation, with seven year experience in the office felt highly motivated due to his performance in the administration as a result of EMIS. He revealed a positive response over an improvement in the implementation of EMIS as a result of administrative factors, though at a slow rate. He noted quite different ways by which administrative factors influenced the implementation of EMIS when he was asked to comment on it. When asked how he thought that government policies influence operational planning at all levels, he noted,

“Policies have been the reference point for operations hence guides resource allocation and performance index”

On the other hand, government policies on education such as provision of resources to schools was commended to be driven by accurate and correct data gathered from schools as the CQASO further noted,

“Resource allocation is based on data on enrolment, status of schools hence accuracy of the data determines the amount of resources allocated”

These views were not far from the other views from another DQASO who had five year experience in the office in the same position. She noted that,

“Government policies help in the delivery of the accurate and reliable information from schools”

In addition to these, the study sought to know how good governance influenced the implementation of EMIS. DQASO was therefore asked to comment on the same and one of them, asked whether EMIS initiatives were better way of improving accountability and transparency in schools agreed and she noted,

“.....as long as the data is accurate, then accountability and transparency would be improved”

Also asked to explain how good governance would influence the implementation of EMIS in schools, he noted,

“Leads to provision of correct data hence correct decisions and effective implementation of programs”

These views indicated that government policies and good governance accounted for the implementation of EMIS, and therefore it can be concluded that administrative factors influence the implementation of EMIS.

These results concur with those of InfoDev (2006) who examines that, it is important to understand that the demands for information are not static or limited to measuring certain variables. Policy makers are under pressure to respond to new policy demands and it is important that they have the appropriate information to make informed decisions. InfoDev (2006) also notes that EMIS data in Ghana is also helping district offices to formulate their annual operational budgets, according to the following funding criteria: 30% is awarded for pupil enrolment levels, 10% is based on the number of schools and 60% according to the disadvantage levels.

4.5.2 Social Factors and Implementation of Education Management Information System

The social factors in the implementation of Education Management Information System are categorized into various sub-factors as follows: Information use and acceptance, and Change in management.

4.5.2.1 Information Use and Acceptance

The first result entailed information use and acceptance. The variables under information use and acceptance included: fear of technology; commitment of MOE officials to quality education through EMIS; confidence of EMIS on the revolution of EMIS process; acceptance of any technology for the purpose of data collection; use of technology to improve data collection from manual to digital platform and Impact of the reduction of the number of questions on the EMIS form by MOEST. The first results for frequency counts and percentages are presented as shown in table 4.10 on a five point Likert scale in frequency counts, percentages, means and standard deviations.

Table 4.10 Information Use and Acceptance.

KEY: SD-Strongly Disagree; D-Disagree; N-Neutral; A-Agree; SA-Strongly Agree.

Information Use and Acceptance on EMIS	SD	D	N	A	SA	M	SD
I fear technology	50(43.5)	14(12.2)	11(9.6)	21(18.3)	19(16.5)	2.52	1.58
Committed of MOE officials to quality education through EMIS	14(12.2)	22(19.1)	31(27.0)	31(27.0)	17(14.8)	3.13	1.24
Confidence of EMIS on the revolution of the EMIS process	59(51.3)	26(22.6)	17(14.8)	3(2.6)	10(8.7)	1.95	1.25
Acceptance of any technology for the purpose of data collection	15(13.0)	9(7.8)	4(3.5)	21(18.3)	66(57.4)	3.99	1.45
Use of technology to improve data collection from manual to a digital platform	8(7.0)	9(7.8)	5(4.3)	21(18.3)	72(62.6)	4.22	1.26
Impact of the reduction of the number of questions on the EMIS form by MOEST	10(8.7)	9(7.8)	17(14.8)	35(30.4)	43(37.4)	3.83	1.27

From the results in table 4.10, it is clear that majority of the teachers and head teachers were not afraid of technology as reported by 50(43.5%) and it also emerged that MOE officials are committed to quality education through EMIS as agreed by 31(27.0%) even though a similar percentage was neutral over the commitment to quality education through EMIS. Furthermore, majority of the Deputy Teachers and Head teachers, 59 (51.3%) were not confident of EMIS on the revolution of the EMIS process, however, they agreed on the acceptance of any technological platform introduced for data collection by 66(57.4%). There was a strong agreement on the use of technology to improve EMIS data collection from manual to digital form and Impact of the reduction of the number of questions on the EMIS form by MOEST by 72(62.7%) and 43(37.4%) respectively.

4.5.2.2 Change Management on EMIS

The second factor under social management was change management, under which various aspects were involved. These included Deputy Teachers and Head teacher's view on the benefits of EMIS change process from manual to electronic system of data collection on school operations, its impact, new innovations, other teachers view on new innovations, workshops attended on organizational culture or change management and the quality of training. The results were presented in frequency count and percentages on a five point Likert scale starting with strongly disagree to strongly agree as shown in table 4.11.

Table 4.11 Change in Management

KEY: SD-Strongly Disagree; D-Disagree; N-Neutral; A-Agree; SA-Strongly Agree.

Change Management on EMIS	SD	D	N	A	SA	M	SD
Benefits of EMIS change from manual to electronic system on school operations	7(6.1)	5(4.3)	20(17.4)	53(46.1)	30(26.1)	3.82	1.06
EMIS system change from manual to electronic impacted the school	64(55.7)	33(28.7)	4(3.5)	6(5.2)	8(7.0)	1.79	1.18
Teachers acceptance of new innovations on data capture by EMIS	8(7.0)	4(3.5)	7(6.1)	31(27.0)	65(56.5)	4.21	1.16
Quality of trainings/workshops	42(36.5)	38(33.0)	2(1.7)	25(21.7)	8(7.0)	2.3	1.34

From the results in table 4.11, it is clear that the EMIS process change from manual to electronic system of data collection was of great benefit as illustrated in the table, 53(46.1%) agreed, and also teachers accepted new innovations on data capture by EMIS, 65(56.5%) agreed. On the other hand, they, 64(55.7%) of the Deputy Head teachers and Head teachers strongly disagreed that it had an impact in schools, and also quality of training and workshops was also low as strongly agreed by 42(36.5%).

In addition to frequency counts and percentages, Pearson product moment correlation was used to test the hypothesis of the study that social factors had a high influence on the implementation of EMIS. The results are presented as shown in table 4.12.

Table 4.12 Correlation between Social Factors and Implementation of EMIS

		Implementation of EMIS	Mean Factors	Social
Implementation of EMIS	Pearson Correlation	1	.371*	
	Sig. (2-tailed)		.002	
Mean Social Factors	Pearson Correlation	.371*	1	
	Sig. (2-tailed)	.002		

From the results in table 4.12, Pearson product moment correlation revealed a moderate positive significant correlation between implementation of EMIS and mean of social factors, ($r=.371$, $p<.05$). Therefore we reject the null hypothesis and adopt the alternative hypothesis that social factors had a low influence on the implementation of EMIS. This implies that implementation is affected by social factors though to a small extent.

The study further narrowed down to the specific factors under the social factors which included information use and acceptance and change in management and a correlation between these factors and implementation of EMIS established. The results are presented as shown in table 4.13

Table 4.13 Relationship between Information use and Acceptance, Change in Management and Implementation of EMIS

Information use and Acceptance		Implementation of EMIS
Government Policies	Pearson Correlation	.383**
	Sig. (2-tailed)	.001
Information use and Acceptance	Pearson Correlation	.333*
	Sig. (2-tailed)	.000
Change in Management	Pearson Correlation	.459*
	Sig. (2-tailed)	.000

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

The results in table 4.8 indicate that there is a low positive significant relationship between government policies and implementation of EMIS, ($r=.383$, $p<.05$), moderate positive significant relationship between information use and acceptance and implementation of EMIS, ($r=.333$, $p<.05$) and finally change in management and implementation of EMIS, ($r=.459$, $p<.05$). This implies that implementation highly depends on these factors and any change in these factors leads to a change in implementation of EMIS.

A simple linear regression model was finally carried out so as to determine the influence of the mean of these factors on the implementation of EMIS. The results were presented, first, coefficient results and finally summary model for the percentage explained by the model. Table 4.14 presents the coefficient results for the uniqueness of the mean social factors.

Table 4.14 Coefficient Results for influence of Social Factors.

Model		Unstandardized Coefficients		Standardized Coefficients		Sig.
		B	Std. Error	Beta	t	
1	(Constant)	2.471	.214		11.531	.000
	Mean Social Factors	.310	.068	.396	4.584	.000

a. Dependent Variable: Implementation of EMIS

The results in table 4.14 indicates that social factors had a unique significant contribution to implementation of EMIS, ($\beta=.396$, $P<.05$) thus implying that social factors which entailed information use and acceptance, and change in management. The model summary, which entails the percentage change or variance in implementation of EMIS was also presented as shown in table 4.15.

Table 4.15 Summary Model Results for The influence of the Mean Social Factors

Model	R	Std. Error Change Statistics							
		R Square	Adjusted R Square	of Estimate	the R Square Change	F Change	df1	df2	Sig. Change
1	.396 ^a	.157	.149	.41993	.157	21.017	1	113	.000

a. Predictors: (Constant), Mean Social Factors

The results in table 4.14 indicate that social factors explained 14.9% change in implementation of EMIS, and it was significant. (Adjusted R Square=.149, $p<.05$) $F(1, 113)=21.017$. Thus it is clear that social factors contribute highly towards implementation of EMIS and any change in social factors may lead to a change in the implementation of EMIS.

CQASO was also interviewed on two aspects under social factors. The main aim was to get a qualitative view on the influence of the social factors on implementation of EMIS. The two factors considered were information use and acceptance and change management. One of the officers with seven year service experience was asked to share his view on whether he found EMIS form adequate in capturing all information required from schools. He noted that,

“I find EMIS to be adequate to a large extent”

Another officer, with five year experience had an almost similar response when asked the same question. His reply was as follows,

“Yes, it is detailed and captures all that is required”

From this feedback, it is clear that information that is captured is very useful and has an influence on the implementation of EMIS. Another question was also asked on whether they thought teachers in the sub-county could accept to use a new innovation or technology aimed at improving EMIS. One of the QAS officers replied as follows,

“Yes, the teacher will accept the new innovation but there is need for training”

These results indicate that as much as teachers would accept the new innovation, there was still need for training. However, the underlying aspect is that information use and acceptance has an influence on the implementation of EMIS.

Change in management was the second aspect that was considered. The CQASO was therefore asked to whether there were new organizational changes and whether new head teachers and deputy head teachers were able to accept the validity of new innovation and also whether this could influence implementation of EMIS. He noted that,

“There has been training of EMIS officer within the office, and by non-governmental organization that interest in the data collected from schools. Also provision of computers and tablets will motivate and improve the accuracy of the information.”

This report indicates that change in management with new innovation techniques will influence the implementation of EMIS. Therefore it can be concluded that social factors can influence the implementation of EMIS as seen also with the empirical studies in this report, though to a small extent.

On the other hand, Barnett & Carroll (1995) ‘found that organizational change involves a transformation of an organization between two points in time’. In the case of the EMIS, this change or transformation would occur during the period before the EMIS is implemented and after the EMIS was implemented. In most African Countries such as Nigeria and Ghana, where EMIS data collection has always been done manually, there is reluctance by the school administrative management to shift to the electronic use of EMIS.

4.5.3 Strategic Factors and Implementation of Education Management Information System

The strategic factors in the implementation of Education Management Information System are categorized into various sub-factors as follows: ICT Reforms, Information needs, Institutional building and capacity development.

4.5.3.1 ICT Reforms

To begin with, results for ICT are presented as per the views that were given to the respondents. ICT factors consisted of: attendance of ICT training on EMIS; helpfulness of ICT training; impact of laptops on learning outcome; ICT priority in primary schools; knowledge in computer applications; Information requirements and collection at school level improvement via ICT reforms; availability of computers; electricity and network connection; and finally means of transport. The views were measured on a five point Likert scale starting with very small extent as point one and very large extent as point five. Frequency counts and percentages for these factors are presented as per the subcategories as shown in table 4.16 below.

Table 4.16 ICT Reforms**KEY: VSE-very small extend; SE-Small extend; ME-Moderate extend; LE-Large extend; VLE- very large extend.**

Influence of ICT Reforms on EMIS	VSE	SE	ME	LE	VLE	M	SD
Attendance of ICT trainings on EMIS	51(44.3)	17(14.8)	28(24.3)	9(7.8)	10(8.7)	2.22	1.323
ICT training is helpful for EMIS application and use in schools	7(6.1)	10(8.7)	27(23.5)	47(40.9)	24(20.9)	3.62	1.097
Impact of laptops on learning outcomes	10(8.7)	11(9.6)	28(24.3)	25(21.7)	41(35.7)	3.66	1.290
Should ICT be given priority in primary schools as it is in secondary schools	3(2.6)	10(8.7)	7(6.1)	27(23.5)	68(59.1)	2.63	1.346
Education will be suitable if well executed in future	3(2.6)	5(4.3)	19(16.5)	40(34.8)	48(41.7)	1.75	1.456
Information requirements and collection at school level can be improved via ICT reforms	1(9)	7(6.1)	22(19.1)	44(38.3)	41(35.7)	4.10	1.408
Knowledge in computer applications	21(18.3)	17(14.8)	34(29.6)	17(14.8)	26(22.6)	2.83	1.420
Having computers in the school	82(71.3)	-	-	-	33(28.7)	2.15	1.817
Availability of electricity	18(15.7)	-	-	-	97(84.3)	4.22	1.290
Availability of a cell phone network connection in the school	41(34.8)	-	-	-	74(64.3)	3.57	1.924
Common means of transport between the school and DEO's office	3(2.6)	83(72.2)	23(20.0)	6(5.2)	0(0.00)	2.22	0.567

From the results in table 4.16, attendance of ICT is done to a very small extent, 51(44.3%) reported, but saw that ICT is helpful for EMIS application and use in schools 47(40.9%). Laptop also has an impact on learning outcomes as noted by 41(35.7%) of the respondents, who also saw that education could be suitable if well executed in the future, 48(41.7%). Even though there was availability of electricity and cell phone network connection in the school as reported by 97(84.3%) and 74(64.3%) respectively, majority of the schools did not have computers and there were no proper means of transport between the schools and DEOs offices, 82(71.3%) and 83(72.2%) reported respectively.

4.5.3.2 Information Needs

Information needs was also way towards achieving the main objective but classified under strategic factors. The views sought included deputy teachers and head teacher's view on time delays experienced from time schools submit data and the time data is able to be used and published for decision making , sufficiency of timelines provided by MOEST for collection of EMIS data, EMIS forms, relevance of EMIS data, Up-to-date decisions made by the DEO and MOEST. The results were presented in frequency count and percentages as shown in table 4.17 on a five point Likert scale.

Table 4.17 Information Needs

KEY: VSE-very small extend; SE-Small extent; ME-Moderate extend; LE-Large extend; VLE- very large extend.

Influence of Information Needs on EMIS	VSE	SM	ME	VLE	ELE	M	SD
Time delays	8(7.0)	17(14.8)	41(35.7)	33(28.7)	16(13.9)	3.28	1.10
Sufficient timelines provided by MOEST for data collection	8(7.0)	35(30.4)	49(42.6)	14(12.2)	9(7.8)	2.83	1.00
EMIS forms containing all aspects of school operations	10(8.7)	17(14.8)	37(32.2)	36(31.3)	15(13.0)	3.23	1.12
EMIS data collected is relevant and reliable	10(8.7)	28(24.3)	39(33.9)	27(23.5)	11(9.6)	3.01	1.10
Decisions made by DEO and MOEST is based on up-to-date statistics.	6(5.2)	12(10.4)	29(25.2)	46(40.0)	22(19.1)	3.57	1.08

The results in table 4.17 indicate that time delays and timelines provided by MOEST for data collection moderately influenced implementation of EMIS, 41(35.7%) 49(42.6%) noted respectively. It is also clear that decisions made by DEO and MOEST is based on up to date statistics to a large extent, as reported by 46(40.0%) of the teachers and head teachers.

4.5.3.3 Institution Building and Capacity Development

The third factor under strategic factors was institutional building and capacity development which consisted of EMIS training attendance at the sub-county level; quality of training, linkage of chances of training to using education data; involvement of teachers in EMIS data collection; and capability of the school administration using and applying EMIS in the daily operation and management. The results are presented in frequency counts and percentages as shown in table 4.18 on a five point Likert scale starting with strongly disagree to strongly agree.

Table 4.18 Institutional Building and Capacity Development

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

Variables	SD	D	N	A	SA	M	SD
Attended EMIS training at the sub-county and county levels	35(30.5)	14(12.2)	12(10.4)	30(26.1)	24(20.9)	2.95	1.57
Quality of training is very high	12(10.4)	38(33.0)	29(25.2)	22(19.1)	14(12.2)	2.90	1.19
Attending of trainings linked to using education data	12(10.4)	9(7.8)	17(14.8)	41(35.7)	36(31.3)	3.70	1.28
How teachers are involved in EMIS data collection	14(12.2)	47(40.9)	47(40.9)	7(6.1)	0(0.00)	2.41	0.78
Capability of the school administration using and applying EMIS in the daily operation and management	8(7.0)	32(27.8)	58(50.4)	9(7.8)	8(7.0)	2.80	0.94

From the results in table 4.18, it is clear that quality of EMIS training was not high as reported by 38(33.0%) of the teachers and head teachers, but attendance of training is linked to using education data, 41(35.7%) agreed. Teachers are also not fully involved in EMIS data collection 47(40.9%) and the capability of the school administration using and applying EMIS in the daily operation and management is not fully guaranteed, 58(50.4%).

Finally Pearson product moment correlation was also carried out to find whether a relationship existed between strategic factors and the implementation of EMIS. First, a general correlation was established, and finally, correlation based on strategic factors, which included ICT Reforms, Information needs, and Institution building and Capacity development. The hypothesis of the study was that strategic factors have a high influence on the implementation of EMIS. The results are presented as shown in table 4.19.

Table 4.19 Relationship between Mean Strategic Factors and Implementation of EMIS

Mean of Strategic Factors		Implementation of EMIS	Mean strategic factors
Implementation of EMIS	Pearson Correlation	1	.423
	Sig. (2-tailed)		.001
Mean strategic factors	Pearson Correlation	.423	1
	Sig. (2-tailed)	.001	

The results in table 4.19 indicate that there is a moderate significant correlation between strategic factors and implementation of EMIS, ($r=.423$, $p<.05$). We therefore reject the null hypothesis and adopt the alternative hypothesis that strategic factors have a low influence on the implementation of EMIS. This implies that as an improvement occurs in strategic factors, there is also improvement in implementation of EMIS. Therefore implementation of EMIS is highly associated with strategic factors.

The study also sought to establish a clear relationship between each of the factors under strategic, and implementation of EMIS. The results were presented as shown in table 4.20.

Table 4.20 Correlation between Factors underlying Strategy and Implementation of EMIS.

Strategic factors		Implementation of EMIS
ICT reforms	Pearson Correlation	.583**
	Sig. (2-tailed)	.001
Information needs	Pearson Correlation	.433*
	Sig. (2-tailed)	.000
Institution building and Capacity development	Pearson Correlation	.459*
	Sig. (2-tailed)	.000

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

The results in table 4.20, indicates that there is a positive significant relationship between implementation of EMIS and each of the factors under strategic factors. These included implementation of EMIS and ICT reforms ($r=.583$, $p<.05$), implementation of EMIS and information needs, ($r=.433$, $p<.05$) and implementation of EMIS and institution building and capacity development ($r=.459$, $p<.05$). Therefore we reject the null hypothesis and adopt the alternative hypothesis. This indicates that each of the aspects under strategic factors significantly associated with implementation of EMIS.

A simple linear regression model was finally carried out to determine the influence of strategic factors on implementation of EMIS. The results for the coefficient unique influence are presented as shown in table 4.21.

Table 4.21 Coefficient Results for the Influence of Strategic Factors on Implementation of ICT.

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	1.762	.164		10.712	.000
	mean strategic factors	.496	.048	.698	10.361	.000

a. Dependent Variable: Implementation of EMIS

The coefficient results in table 4.21 indicate that strategic factors have a unique and significant influence on the implementation of EMIS, ($\beta=.698$, $p<.05$). This implies that a

.change in standard deviation of the strategic factors leads to a .898 standard deviation change in implementation of EMIS.

In addition to the coefficient results, a summary model coefficient results was presented as shown in table 4.22

Table 4.22 Model Summary for the Influence of Strategic Factors on the Implementation of EMIS

Model	R	R Square	Adjusted R Square	Std. Error Change Statistics			df1	df2	Sig. Change	F
				Estimate	Change	Square F				
1	.698 ^a	.487	.483	.32749	.487	107.359	1	113	.000	

a. Predictors: (Constant), mean strategic factors

The results indicate that overall, strategic factors explained 48.3% significant change in the implementation of EMIS, (Adjusted R Square =.483, F(1, 113)=107.359, p<.05). This shows that strategic factors account for a significant percentage in the implementation of EMIS.

An interview with CQASO on strategic factors revealed that that there was also a relationship between strategic factors and implementation of EMIS. He noted that,

“ICT reforms have had some notable influence on the implementation of EMIS whereas Information needs and institutional building and capacity development have had a great impact”.

This indicates that strategic factors have had some influence on the implementation of EMIS as reported by the CQASO. Most of the officers had a similar feedback, stating that strategic factors were of vital importance to the implementation of EMIS and had accounted for much. These results are in tandem with the empirical results that shows a large percentage of the implementation of EMIS being accounted for by the strategic factors, and also agree with the literature findings, where Education Ministries in Bangladesh and Nigeria have taken advantage of recent advances in technology and falling costs. InfoDev (2006), posits that the strategy varies from one country to another, but one common influence has been the role of donor funds

4.5.4 Economic Factors

The final objective of the study was to establish the extent to which economic factors influence the implementation of Education Management Information System in Kisumu East Sub County. This was established through two factors which were: donor funding and budget allotment.

4.5.4.1 Donor Funding

Donor funding consisted of funding education activities, satisfaction with donors and government in funding schools, donors funding education that is driven by statistics from reliable sources, commitment of donors to support EMIS at schools, and finally continued donor involvement and support in EMIS. The results for donor funding are presented as shown in table 4.23, in frequency counts and percentages.

Table 4.23 Donors Funding**KEY: VSE-Very Small extent; SE-Small extent; ME-Moderate extent; LE-Large extent; VLE- Very Large extent**

Variables	VSE	SE	ME	LE	VLE	M	SD
Fund education activities help improve learning outcomes	24(20.9)	67(58.3)	10(8.7)	11(9.6)	3(2.6)	2.15	0.95
Satisfaction with donors and government in funding schools	24(20.9)	44(38.3)	10(8.7)	16(13.9)	21(18.3)	2.70	1.42
Donors funding education that is driven by statistic from reliable sources	6(5.2)	12(10.4)	9(7.8)	37(32.2)	51(44.3)	4.00	1.19
Commitment of donors to support EMIS in schools	7(6.1)	31(27.0)	34(29.6)	29(25.2)	14(12.2)	3.10	1.12
Continued donor involvement and support in EMIS	7(6.1)	4(3.5)	30(26.1)	44(38.3)	30(26.1)	3.75	1.07

From the results in table 4.23, it is clear that according to teachers and head teachers views, funding education at schools helps improve learning outcomes to a small extent, 67(58.3%) reported, and also majority were satisfied with donors and government in funding schools to a small extent, 44(38.3%). Commitment of donors to support EMIS in schools was to a moderate extend while continued donor involvement and support in EMIS was to a large extent. However, donors were currently interested in funding education that is driven by statistics from reliable sources as seen by the majority of deputy teachers and head teachers, 51(44.3%).

4.5.4.2 Budget Allotment

The second and final factor under Economic factors was budget allotment. Under this, there were various aspects which included: lack of motivation to continue capturing EMIS data; compensation for the EMIS work done at the school, need for an extra teacher to handle EMIS matters, and the extent to which hiring an extra teacher will improve the data quality, use and application of EMIS in schools. The results are presented in frequency counts and percentages as shown in table 4.24.

Table 4.24 Budget Allotments

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

Variables	SD	D	N	A	SA	M	SD
Lack of motivation to continue capturing EMIS data	17(14.8)	24(20.9)	31(27.0)	26(22.6)	17(14.8)	3.02	1.28
Compensated for the EMIS work done at the school	10(8.7)	3(2.6)	12(10.4)	28(24.3)	62(53.9)	4.12	1.24
Need for an extra teacher to handle EMIS matters	32(27.8)	16(13.9)	15(13.0)	18(15.7)	34(29.6)	3.05	1.62
Hiring an extra teacher will improve the data quality, use and application of EMIS in schools	36(31.3)	24(20.9)	6(5.2)	31(27.0)	18(15.7)	2.75	1.52

The results indicate that there was compensation of EMIS work done at the school as shown by 62(53.9%) of the respondents, there is need for an extra teacher to handle EMIS, 34(29.6%), however, hiring an extra teacher would not improve the data quality, use and application of EMIS in schools as reported by 36(31.3%) of the respondents.

The study sought to establish the relationship between economic factors and implementation of EMIS through Pearson Product moment Correlation. This was because economic factors were hypothesized to have a high influence on the implementation of EMIS. First, a correlation was established between economic factors and implementation of EMIS and finally a simple linear regression model carried out to find the influence of strategic factors on the implementation of EMIS.

Table 4.25 Correlation between Economic Factors and Implementation of EMIS.

Economic Factors		Implementation of EMIS
Donor Funding	Pearson Correlation	.483**
	Sig. (2-tailed)	.000
Budget allotment	Pearson Correlation	.359*
	Sig. (2-tailed)	.049

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

The results in table 4.25, indicates that there is a relationship between each of the economic factors and the implementation of EMIS. First, donor funding positively and significantly correlated with implementation of EMIS, ($r=.483$, $p<.05$), and budget allotment, ($r=.359$, $p<.05$) .We therefore reject the null hypothesis and adopt the alternative hypothesis that there is a low influence of economic factors on the implementation of EMIS. This implies that implementation of EMIS was associated with all these factors and that it was affected when these factors varied.

A simple linear regression model was therefore carried out to find the influence of economic factors on the implementation of EMIS. The coefficient results are presented as shown in table 4.26.

Table 4.26 Regression of Administrative factors on Implementation of EMIS.

Coefficients ^a		Unstandardized Coefficients		Standardized Coefficients		
Model		B	Std. Error	Beta	t	Sig.
1	(Constant)	2.081	.359		5.901	.000
	Mean of administrative factors	.423	.125	.437	4.803	.000

a. Dependent Variable: Implementation of EMIS

From the results in table 4.26, it is clear that economic factors had a unique significant influence on implementation of EMIS, ($\beta=.437$, $p<.05$). This implies that while controlling for other variables, economic factors uniquely influenced implementation of EMIS. One standard deviation in administrative factors led to one unit change in implementation of EMIS.

A summary result for the percentage change in the implementation of EMIS accounted for by administrative factors was presented as shown in table 4.27.

Table 4.27 Summary Model for Economic Factors.

Model	R	R Square	Adjusted R Square	Std. Error Change Statistics			Sig. Change	F	
				R of Estimate	the R Change	Square F Change			
1	.666 ^a	.444	.439	.34101	.444	90.223	1	113	.000

a. Predictors: (Constant), economic factors

From the results in table 4.27, economic factors explained 43.9% change in the implementation of EMIS, (adjusted R square=.106, $F(1, 113) = 14.460$, $p<.05$). It is thus clear that any change in the implementation of EMIS is associated with economic factors. From the results obtained on the interview with the CQASO officers, economic factors were also of significant importance. Donor funding both from government and external aid was noted as of influence. For instance, one of the ZQASO officers noted that,

“Donor funding improves the morale of the teacher to give the right information.”

Other officers commended on the budget allotment and noted that there was a very significant influence of the economic factors on the implementation of EMIS.

Serious thought and discussion of the longer-term funding challenges are required to assure sustainable EMIS development in the future. From the literature findings, a report obtained by InfoDev (2006) revealed that it is equally important to ensure that commitment is obtained from senior management and donors to the data collection process. Lack of continuity in data collection due to insufficient donor funding and budget allocation prevents time series analysis from being conducted and can also lead to reduce confidence in that data set.

4.5.5 Moderating Variable

The moderating variable for the framework stipulates the need for integrating quality data which is beneficial to all users both internal and external if EMIS implementation is to be realized. The continued demand for quality data from schools as well as the need to integrate the data collected, remains critical to policy makers and planners in as far as education management and planning is concerned. Data integration is one of the most important factors in EMIS development strategies (Education, 2006). It means that data from multiple sources, multiple years and multiple levels (school level, external level, or MOE level) can be linked, integrated or merged (Chapman, 1991, McDonald et al., 2007). Data integrations add value to the collected data and must happen before policy analysis (Chapman, 1991) because it cannot readily be integrated, or the integrated data used, unless a data integration strategy is implemented. Without coordinated management, there cannot be an effective EMIS. Hence, during the data analysis process, the moderating variable remained constant as supported by the above mentioned arguments since the influence of the independents variables on the dependent variable in this case could be weighed if demands for quality data and integration from both policy and decision makers is constant.

CHAPTER FIVE

SUMMARY OF FINDINGS, CONCLUSIONS AND RECOMMENDATIONS

5.1 Introduction

This chapter presents summary, conclusions and recommendations of the study. The problem of this study emanated from the state of implementation of EMIS, which despite the inception of EMIS data collection little has been done in Kisumu East Sub County. There have been claims to increase the allocations per school in the county but this increase only has to be supported by relevant and reliable data which solely lies on EMIS. Studies on the factors influencing EMIS implementation have been lacking in Kisumu East Sub County and therefore this study sought to fill this gap. The purpose of this study was to investigate the factors influencing the slow implementation of Education Management Information System in primary schools within Kisumu East Sub County, Kenya.

Specifically, the study sought to: assess the extent to which administrative factors influence the implementation of Education Management Information System in Kisumu East Sub County; to determine the extent to which social factors influence the implementation of Education Management Information System in Kisumu East Sub County; to establish the extent to which strategic factors influence the implementation of Education Management Information System in Kisumu East Sub County; and to determine the extent to which economic factors influence the implementation of Education Management Information System in Kisumu East Sub County.

Purposive sampling method was used to arrive at the study sample and the required sample size of 94.18% was achieved. A structured questionnaire and interview schedule was used to collect data from a total of 126 primary school Head teachers and Deputies from 63 primary schools who were directly involved in the collection of information for the MOE for planning purposes. The comprehensive analysis undertaken during this study resulted in various findings: some arose from the literature surveyed, some emerged from the study methodologies adopted whereas the bulk of results emanated from data analysis as presented in chapter four of the study. To begin with, a summary of the study findings have been presented as per the objectives of the study.

5.2 Summary of the Study Findings

With regard to the objectives of the study, a summary of the study findings was presented. These summary is presented as follows.

5.2.1 Administrative Factors on the Implementation of EMIS.

To achieve the influence of administrative factors on the implementation of EMIS, Pearson product moment correlation was carried out. The results revealed a high correlation between administrative factors and implementation of EMIS. First, government policies positively and significantly correlated with implementation of EMIS, ($r=.383$, $p<.05$), good governance, ($r=.233$, $p<.05$) and finally management and operation of EMIS, ($r=.159$, $p<.05$). This association was significant. Simple linear regression model also revealed that administrative factors had a unique significant influence on implementation of EMIS, ($\beta=.337$, $t(115)=3.8$, $p<.05$) and therefore administrative factors had an influence on the implementation of EMIS. It therefore explained 10.6% change in the implementation of EMIS, (adjusted R square=.106, $F(1, 113)=14.460$, $p<.05$) which was significant.

5.2.2 Social Factors on the Implementation of EMIS

Under social factors, information use and acceptance and change management were the main aspects of study. Using Pearson product moment correlation, the results indicated that there is a low positive significant relationship between government policies and implementation of EMIS, ($r=.383$, $p<.05$), moderate positive significant relationship between information use and acceptance and implementation of EMIS, ($r=.333$, $p<.05$) and finally change in management and implementation of EMIS, ($r=.459$, $p<.05$). The overall correlation between social factors and implementation was also moderate and significant, ($r=.371$, $p<.05$). A simple linear regression model indicated that social factors explained 14.9% change in implementation of EMIS, and it was significant.

5.2.3 Strategic Factors and Implementation of EMIS

The results revealed a significant correlation between strategic factors and implementation of EMIS, ($r=.423$, $p<.05$) and each of the factors under strategy was also significantly correlated with implementation. There was also a correlation between Implementation of EMIS and ICT reforms ($r=.583$, $p<.05$), implementation of EMIS and information needs, ($r=.433$, $p<.05$) and implementation of EMIS and institution building

and capacity development ($r=.459$, $p<.05$). Finally, simple linear regression model revealed that strategic factors accounted for 43.8% change in the implementation of EMIS.

5.2.4 Economic Factors on the Implementation of EMIS

Donor funding positively and significantly correlated with implementation of EMIS, ($r=.483$, $p<.05$), and budget allotment, ($r=.359$, $p<.05$). This implies that implementation of EMIS was associated with all these factors and that it was affected when these factors varied. It also emerged that economic factors had a unique significant influence on implementation of EMIS, ($\beta=.437$, $p<.05$) and accounted for 43.9% change in the implementation of EMIS

5.3 Conclusions

The conclusion of the current study was drawn from the entire study, starting with the background to the data analysis section. These have been presented as per the subtopics, which are the objectives of the study.

From the background of the study, various factors hypothesized under administration to be relevant towards the implementation of EMIS. Due to a significant percentage change in implementation of EMIS explained by administrative factors, it can be concluded that administrative factors have an influence on the implementation of EMIS. Without Government policies, Good governance, and Management and operation of EMIS by school, there can never be implementation of EMIS.

Information use and acceptance has a very high significant influence on the implementation of EMIS. This has a similar impact as change management as reflected in the results. Small impact of change in EMIS system from manual to electronic does not have an impact implying that there is a negative perception by the teachers on the use of EMIS. Furthermore, it has not taken deeper roots in the schools and there is no much awareness due to slow acceptance of the information and thus this made the implementation process very slow leading to low impact on implementation of EMIS.

Information needs has an important impact in the implementation of EMIS. Without training, EMIS will be viewed as useless and therefore awareness and training are

paramount aspects towards the implementation of EMIS. In addition, ICT reforms also play a very important role, lack of change in these reforms implies a slow process of implementation of any ICT sectors and therefore as shown in the present study, no new changes will be expected. This is same as institution building and capacity development, which is reflected through workshop and training attendance and also the ability to embrace new technology. It is therefore clear that strategic factors have a high influence on the implementation of EMIS and any change in these factors results to a direct change in the implementation of EMIS.

Economy is the definition of the financial well-being in any institution. Donor funding and budget allotment are the two aspects that were defined in the present study. These have a great influence on the implementation of EMIS. Good donor funding implies that there will be hope in any of the process under consideration while poor donor funding implies slow progress. It is therefore clear that economic factors have a high influence on the implementation of EMIS.

5.4 Recommendations

The current results on the factors influencing the implementation of Education Management Information System in primary schools were exhaustive in their findings. As a result, the following recommendations were observed:

1. The administrative factors such as good governance and government policies should be clarified in the schools so as the objective of the implementation be achieved in time rather than taking longer.
2. Teachers should be trained on the information use so that they can be flexible to accept this information to work towards the implementation of EMIS.
3. Capacity building on EMIS should be intensified by the government in order to realize its influence on the EMIS implementation.
4. Donor agencies should consider proper allocation of their funds, and in time in order to aid in the implementation of EMIS.

5.5 Suggestion for Further Studies

The following suggestions were viewed of importance to the future of EMIS.

1. Studies should be carried out on the competency of the management on the implementation of EMIS.
2. Influence of Training on the implementation of EMIS.
3. The nature of strategic factors and its influence on the performance of implemented EMIS in the schools.
4. The influence of accountability in socio-economic factors on the implementation of EMIS.

REFERENCES:

- Ahn, M. J., et al., 2004. From Leaders to Leadership: Managing Change. *The Journal of Leadership and Organizational Studies* [online]
- Atchoarena, D., 1993. *Educational strategies for small island states*. Paris: UNESCO International Institute for Educational Planning.
- Barnett, W. P., and Carroll, G. R., 1995. Modelling Internal Organizational Change. *Annual Review of Sociology* [online]
- Benjamin, R. I., and Levinson, E., 1993. A Framework for Managing IT-Enabled Change. *Sloan Management Review* [online], 34(4).
- Bhatti, S. A., & Adnan, A. (2010). Challenges in education management information system in developing countries. Peshawar: Institute of Management Sciences.
- Cassidy, T., 2006. Education Management Information System (EMIS) in Latin America and The Caribbean: Lessons and Challenges. Work Document: the Inter-American Development Bank: Work Policy Document.
- Chapman, D. W. & Dhungana, M. (1991) Education data quality in Nepal. *Evaluation and Program Planning*, 14, 307.
- Cohen, L., Manion, L., and Morrison, K., 2000. *Research Methods in Education*. 5ed. London: Routledge.
- Connal, C. (2005) NFE-MIS Handbook Developing a Sub-National Non-Formal Education Management Information System, France, UNESCO.
- Dooley, K. E., 1999. Towards a Holistic Model for the Diffusion of Educational Technologies: An Integrative Review of Educational Innovation Studies. *Educational Technology and Society* [online], 2(4).
- Education, U. S. D. O. (2006) Improving Data Quality for Title I Standards, Assessments, and Accountability Reporting: Guidelines for States, LEAs, and Schools (Non-Regulatory Guidance).
<http://www.ed.gov/about/pubs/intro/index.html?src=gu>.
- Farnsworth, C. (2002) Data Collection and Use in Schools. PREL Briefing Paper. Pacific Resources for Education and Learning.
site: <http://www.prel.org>. For full text: http://www.prel.org/products/fa_/data_collection.htm.

- Galabawa, C.J. (2003). Enhancing Efficiency, Improving Quality and Relevance: A paper Presented in the Kenya National Conference on Education, at Kenyatta International Conference Centre (KICC) Nairobi, 27 to 29 November, 2003.
- Gamage, D. T., and Sooksomchitra, P., 2004. Decentralisation and School-Based Management in Thailand. *International Review of Education* [online]
- Harvey, S. (2004) Education project management in the information age: the case of the Kimberley Thusanang Project. *International Journal of Educational Development*, 24, 241.
- Hua, H., & Herstein, J. (2003). Education management information system (EMIS): Integrated data and information systems and their implications in educational management. Paper presented at the annual conference of comparative and International Education Society, New Orleans, LA.
- InfoDev: Rethinking Education Management Information System: *Lessons from and Options for Less Developed Countries* Working Paper No.6, 2006. (InfoDev Documents_504.pdf) by Michael Trucano (2006)
- Kombo, D. K and Delna, T., 2006: Proposal and Thesis writing: An Introduction
- Konopka, R., and Korrapati, R., 2006. Properties of Shared Knowledge – Application of Highly Integrated Information Sharing Systems in Public Education. *Proceedings of the Academy of Information and Management Sciences*
- Kumar, C. R., 2008. *Research Methodology* [online]. New Delhi: APH Publishing Corporation.
- Lessen, E., and Sorensen, C., 2006. INTEGRATING Technology in Schools, Colleges, and Departments of Education. *Change* [online].
- Lovely, J (2011) Education Management Information System In Africa (and elsewhere) Available at: {URL:<https://edutechdebate.org/tag/dr-john-lovely/>}
- Lewis, W., et al., 2003. Sources of Influence on Beliefs about Information Technology Use: An Empirical Study of Knowledge Workers. *MIS Quarterly* Available at: [URL:http://scholar.google.com/scholar/](http://scholar.google.com/scholar/)
- McDonald, S.-K., Andal, J., Brown, K. & Schneider, B. (2007) Getting the Evidence for Evidence-Based Initiatives: How the Midwest States Use Data Systems to Improve Education Processes and Outcomes. Issues & Answers. REL 2007-No. 016. Regional Educational Laboratory Midwest.

- McHugh, R. (2007) Strengthening education management information systems. Better use of data for better strategic planning. Educational planning in the Pacific.
- Medlin, B.D. (2001). The factors that may influence a faculty member's decision to adopt electronic technologies in instruction (Doctoral dissertation, Virginia Polytechnic Institute and State University, 2001). ProQuest Digital Dissertations.
- Moses, K. (2000) Information Systems for Education Management. Techknowlogia, Knowledge Enterprise, Inc.
- Moses, K (2001) =Education Management Information System: What is it and Why do we not have more of it?' *Journal of Techknowlogia*, Jan 2001.
- O'Brien, J. A., 2002. *Management Information Systems – Managing Information Technology in the E-Business Enterprise*. 5th ed. New York: McGraw-Hill.
- Odhiambo.D. (2010). Task force on re-alignment of education to the Constitution 2010 and Vision 2030 and beyond. The Government of Kenya.
- OECS Education Reform Unit, 2000. Pillars for Partnership and Progress – The OECS Education Reform Strategy: 2010 [online]. OECS Education Reform Unit. Available at: <URL: [http:// www.oeru.org](http://www.oeru.org)>
- Orodho J.A., (2003) *Regional Inequalities in Education, Population and Poverty Patterns in Kenya: Emerging Issues and Policy Directions*, Population of Kenya Journal, 1
- Parisot, A.H. (1995). Technology and teaching: The adoption and diffusion of technological innovations by a community college faculty (Doctoral dissertation, Montana State University, 1995). ProQuest Digital Dissertations.
- Portelli, J., 2008. Researching a Secondary School in Malta. In: P. Sikes and A. Potts, ed. *Researching Education from the Inside: Investigations from within*. London and New York: Routledge, 2008.
- Powell, M (2006) InfoDev study #1253 Education Management Information System: Case Studies and Lessons Learnt, Case Study of Ghana.
- Rathwell, M. A., and Burns, A., 1985. Information Systems Support for Group Planning and Decision-Making Activities. *MIS Quarterly* [online]
- Republic of Kenya (GOK), (1964). Kenya Education Commission, Nairobi: Government Printer.

- Rogers, E. (2003). *Diffusion of Innovations*. Fifth edition. Free Press: New York.
- Ryan & Gross (1943), The Diffusion of Hybrid Seed Corn in Two Iowa Communities, *Rural Sociology* 8 (March): 15
- Smyth, A., and Holian, R., 2008. Credibility issues in research from within organizations. In: P. Sikes & A. Potts, ed. *Researching Education from the Inside: Investigations from within*. London and New York: Routledge, 2008.
- Staudenmayer, N., et al., 2002. Time to Change: Temporal Shifts as Enablers of Organizational Change. *Organization Science* [online].
- Tarver, A. & et al. (1995) The Development of a Data Collection and Management System for the Louisiana Teacher Assessment Program.
- Techknowlogia*, January/February, 2001 Knowledge Enterprise, Inc. www.TechKnowLogia.org
- Toews, D. (2003) The New Tarde: Sociology after the End of the Social *Theory Culture & Society* 20 (5), 81-98.
- UNESCO (2005) EFA Global Monitoring Report – The Education for All – The Quality Imperative, UNESCO, Paris.
- UNESCO (2010). Education for All Global Monitoring Report: Reaching the Marginalized. Paris.
- USAID, (2005) Meeting EFA: Cost-Effectiveness of Complementary Approaches, Working Paper, Equip 2, Washington.
- Voigts, F. (1998). Development of An Education Management System (EMIS) in Namibia –*Namibia*. UNESCO/International Institute for Educational Planning: Paris
- Wako, T. N., 2003. *Education Management Information System - An overview* [online]. Harare, Zimbabwe: NESIS/UNESCO
- Wako, N (2003a) Education Management Information Systems – A guide for Young Managers, Harare, Zimbabwe. NESIS/UNESCO
- Willingham, W. W., & Cole, N. S. (1997). *Gender and fair assessment*. Mahwah, NJ, USA: Lawrence Erlbaum Associates.
- Yamane, Taro (1967). *Statistics: An Introductory Analysis*, 2nd Ed., New York: Harper and Row.

APPENDICES:

Appendix I: Letter of Transmittal

Dear Respondent,

I am a student at the University of Nairobi-Kisumu Campus pursuing a Master's Degree in Project Planning and Management. Currently, I am undertaking research on the *Factors Influencing the slow Implementation of Education Management Information System in primary schools within Kisumu East Sub County*. The main purpose of this research is to make a contribution to the theory and practice of Education Management Information Systems (EMIS) in schools by better understanding its use by the school administration and management.

The key objectives of this research are to:

- To assess the extent to which administrative factors influence the implementation of Education Management Information System in Kisumu East Sub County.
- To determine the extent to which social factors influence the implementation of Education Management Information System in Kisumu East Sub County.
- To establish the extent to which strategic factors influence the implementation of Education Management Information System in Kisumu East Sub County.
- To determine the extent to which economic factors influence the slow implementation of Education Management Information System in Kisumu East Sub County.

I have therefore identified your office as a rich source of information .The information you will provide, will be treated with utmost respect and confidentiality. Your cooperation, honesty, objectivity and accuracy in responding to the questions that follow will assist greatly in this research as well as the overall accomplishment of my academic goals.

Please answer the questions exhaustively.

Thank you in advance.

Yours faithfully,
Josiah N. Muyesu

Appendix II: Questionnaire for Head Teachers and Deputy Head teachers

Dear Respondent,

My Name is Nyambaga Josiah Muyesu, a student at the University of Nairobi-Kisumu Campus pursuing a Master's Degree in Project Planning and Management. Currently, I am undertaking research project on the **Factors Influencing the Implementation of Education Management Information System in primary schools within Kisumu East Sub County**. The main purpose of this research project is to make a contribution to the theory and practice of Education Management Information Systems (EMIS) in schools by better understanding its use by the school administration and management.

Your cooperation will be highly appreciated.

Instructions

You are kindly requested to fill in the blank spaces at the end of each question or statement or simply put a tick [√] where appropriate.

Note: There is no right or wrong answer.

Respondent Number

SECTION 1: PART A

Name of School:

BACKGROUND INFORMATION

1. **What is your gender**

Male

Female

2. **Designation/ Title**

Head Teacher

Deputy Head Teacher

3. **How many years have you worked/served as a Head Teacher /Deputy**

1-2 years

3-4 Years

4-6 Years

Above 6 Years

4. **What is your highest educational qualification**

Diploma

Degree

Master

Others please specify

5. **In which Sub Location is this schools situated?**

6. **In which Zone is this school situated in?**

PART B:

SECTION 2: ADMINISTRATIVE FACTORS INFLUENCING IMPLEMENTATION OF EMIS

A: GOVERNMENT POLICIES

1 To what extent do you agree that EMIS data helps in operational planning by the government for both county and national development?

A Very small extent [] B Small extent [] C Moderate extent [] D Very large extent []

2 Do you agree that the policies made by government are data driven and help in performance management?

A I disagree [] B Somewhat disagree [] C Somewhat agree [] D Fully agree []

3 How likely are organizations and institutions such as schools able to improve internal efficiency through government policies?

A Very unlikely [] B Unlikely [] C Not sure [] D Likely [] E Very likely []

4 How important are government policies in relation to education planning and management?

A Very important [] B Somewhat important [] C Not very important [] D Not important at all []

5 Would you support 'data driven' policies that will improve operational planning at school level?

A YES [] B NO [] C Not sure []

B: GOOD GOVERNANCE

6 Do you agree that EMIS data can be used to improve accountability and transparency in schools?

A I disagree [] B Somewhat disagree [] C Somewhat agree [] D Fully agree []

7 To what extent are you involved in decision making at your school?

A Very small extent [] B Small extent [] C Moderate extent [] D Very large extent []

8 To what extent are you involved in the preparation and implementation of school improvement plans in your school?

A Not involved [] B Partially involved [] C Fully involved [] D Not sure/Never been involved []

9 How often do you attend meetings related to EMIS (education management) in your Zone or Sub County?

A Never [] B A few times per term [] C Monthly D Less than once per month

10 Do you access information regarding your school operations at your Zone/Sub county or county level? YES [] NO []

C: MANAGEMENT AND OPERATION OF EMIS

11 Do you have confidence in the data collection tool (questionnaire) that is currently being used to capture school data?

A YES [] B NO [] C Not sure []

12 To what extent do you use the EMIS data to make day to day decisions in the management of your school's operations?

A Smaller extent [] B Larger extent [] C Rely on decisions made by MOE []

13 Which officer last visited your school last regarding EMIS?

A DEO [] B Deputy DEO [] C DQASO [] D TAC Tutor [] E Examination Officer [] F None []

14 How many times has someone from DEO's office visited your school since January 2015?

A No visit [] B One visit [] C Two visits [] D More than three visits [] E can't remember []

15 What impact does EMIS information collected by your office to MOEST for planning purposes have to your school's needs?

A Major impact [] B Moderate impact [] C Minor impact [] D Not sure []

16 How do you currently access data from EMIS?

A No access [] B Statistics published on paper [] C Digital access via CD ROM []

D Digital access via internet []

17 What sources of information do you use to make decisions to support education activities?

A DEB Records [] B EMIS [] C School request [] D All the above [] E Other []

18 How long on average (in days) does it take you to submit your Green forms (EMIS) data to the nearest MOE office close to you?

SECTION 3: SOCIAL FACTORS INFLUENCING IMPLEMENTATION OF EMIS

A: INFORMATION USE AND ACCEPTANCE

19 Do you fear technology? (i.e. use of any improved platform that can replace a manual system)

A YES [] B NO [] C Not sure []

20 To what extent do you agree that the top officials at the MOE (e.g. DEO, DQASO etc.) are committed to education quality through EMIS?

A Very small extent [] B Small extent [] C Moderate extent [] D Very large extent []

21 Are you confident that ICT (such as Computers, tablets, phones etc.) can be used to revolutionize the EMIS process?

A YES [] B NO [] C Not sure []

22 Would you accept any technology introduced to you or your school for the purpose of data collection?

A YES [] B NO [] C Not sure []

23 Do you agree that technology can be used to improve to EMIS data collection from manual system to use of a digital platform such as Computers and phones?

A I disagree [] B Somewhat disagree [] C Somewhat agree [] D Fully agree []

24 Do you support the move by MOEST that saw to the reduction of number of question on the EMIS form (Green form)?

A YES [] B NO [] C Not sure []

B: CHANGE MANAGEMENT

25 To what extent do you think the Head teachers and Deputies can accept the change process from manual to electronic system of data collection in schools?

A Very small extent [] B Small extent [] C Moderate extent [] D Very large extent []

26 What impact is likely to be realized from the above change process in your school?

A Major impact [] B Moderate impact [] C Minor impact [] D Not sure []

27 Would you accept new innovations in your school regarding data capture by EMIS?

A YES [] B NO [] C Not sure [] D I Like the current EMIS system []

28 How likely are teachers in your school able to accept new innovations regarding data capture by EMIS?

A Very unlikely [] B Unlikely [] C Not sure [] D Likely [] E Very likely []

29 Have you ever attended any training or work shop on organizational culture or change management?

A YES [] B NO [] C Not sure []

SECTION 4: STRATEGIC FACTORS INFLUENCING IMPLEMENTATION OF EMIS

A: ICT REFORMS

30 Have you ever attended any ICT training on EMIS?

AYES [] B NO [] C Not sure []

31 Do you support the move by government to provide ICT devices e.g. laptops to schools?

AYES [] B NO [] C Not sure []

32 What impact is the provision of laptops to schools likely to have on education quality?

A Major impact [] B Moderate impact [] C Minor impact [] D No impact []

33 In your own opinion, do you think it's good to prioritize ICT in primary schools as at now?

AYES [] B NO [] C Not sure []

34 To what extent do you think reforms such as provision of computers in primary schools will be sustainable in the long run?

A Very small extent [] B Small extent [] C Moderate extent [] D Very large extent []

35 Do you agree that the ICT reforms can help improve information requirements in schools? (e.g. providing computers and training to teachers so that information captured on EMIS is accurate and reliable)

A I disagree [] B Somewhat disagree [] C Somewhat agree [] D Fully agree []

36 Do you have knowledge in Computer applications such as MS Word, Excel etc.?

AYES [] B NO []

37 Do you have a computer in your school? (if No skip to Question 41 on electricity)

AYES [] B NO []

38 If Yes, how many computers?

39 From the computers mentioned, how many are able to be used today?

40 Do you have a Computer lab/class set aside for Computer storage / ICT related purposes?

AYES [] B NO []

41 Do you have electricity connection in your school?

AYES [] B NO []

42 Does this school have a cell phone network reception?

AYES [] B NO []

43 Which is the MOST common means of communication between your school and the DEO's office?

Landline Phone

Mobile/Cell Phone

Text Message

Word of Mouth/Messenger

B: INFORMATION NEEDS

44 Do you agree that there are time lags/delays from the time schools submit the data and the actual time the data is able to be used and published for decision making?

A I disagree [] B Somewhat disagree [] C Somewhat agree [] D Fully agree []

45 Do you receive EMIS forms (green forms) on time for capturing data from MOEST?

A YES [] B NO [] C Sometimes [] D Rarely []

46 Is the time period (duration) given to you to fill the forms normally enough or sufficient?

A YES [] B NO [] C Sometimes []

47 Do the EMIS forms capture all aspects of your schools operations in terms of financial, structural and resource based policies?(Is the form adequate?)

A YES [] B NO [] C Not sure []

48 Do you find the information required of you to capture on the EMIS forms relevant and reliable?

A YES [] B NO [] C Not sure []

49 Do you agree that the current decision making process regarding school management at both DEO and MOEST level is based on up-to-date statistics?

A I disagree [] B Somewhat disagree [] C Somewhat agree [] D Fully agree []

C: INSTITUTIONAL BUILDING AND CAPACITY DEVELOPMENT

50 Have you ever attended any EMIS training either at the Sub County or County level?

A YES [] B NO [] C Not sure []

51 How many times have you ever attended EMIS trainings since you were deployed to your school?

A Never [] B Only once [] C Two times [] D More than 5 times []

E Several times can't remember count []

52 Would you attend any training linked to using education data?

A YES [] B NO [] C Not sure []

53 To what extent are teachers in your school involved in EMIS data collection?

A Not involved [] B Partially involved [] C Fully involved [] D Not sure/Never been involved []

54 Who is responsible for EMIS data collection in your school from the list below?

A Head Teachers [] B Deputy Head teacher [] C Both Head teacher and Deputy []
D Senior Teacher [] E None []

55 To what extent are you and your staff in your school able to appropriately use and apply EMIS in the daily operation and management of your school?

A Very small extent [] B Small extent [] C Moderate extent [] D Very large extent []

SECTION 5: ECONOMIC FACTORS INFLUENCING IMPLEMENTATION OF EMIS

A: DONOR FUNDING

56 Whose responsibility is it to fund education activities so as to improve learning outcomes in schools?

A Government [] B Donors(both external and internal) [] C Both Government and Donors []
D None []

57 Are you aware of any funding strategies that are used to support EMIS in school? (what bodies/partners aid in funding EMIS in schools)

A YES [] B NO [] C Not sure []

58 Do you agree to the notion that donors (external) want to fund education that is only supported with statistics from reliable information gathered?

A YES [] B NO [] C Not sure []

59 Given your experience and interaction with EMIS data collection in your school, to what extent do you think that the donors are fully committed to supporting EMIS in schools?

A Very small extent [] B Small extent [] C Moderate extent [] D Very large extent []

60 Do you think more Donor involvement and support in EMIS initiatives would improve decision making processes, education management and planning?

A Very small extent [] B Small extent [] C Moderate extent [] D Very large extent []

B: BUDGET ALLOTMENT

61 Do you feel motivated enough to continue capturing EMIS data for your school?

AYES [] B NO [] C Not sure []

62 Would you prefer recognition (e.g. extra remuneration or incentives) in capturing EMIS data for your school?

AYES [] B NO [] C Not sure []

63 If extra remuneration was to be given to EMIS data collectors at school level, do you think it will improve the system for EMIS data collection?

AYES [] B NO [] C Not sure [] D Not necessary in my school

64 Would you advocate for all primary schools to have a designated staff trained in EMIS data collection with clear job descriptions and who is solely paid for EMIS work?(though doubles as a teacher as well)

AYES [] B NO [] C Not sure [] D Not necessary in my school

65 Do you agree that the current budget allotment on education by the Government is adequate for school operations including your school?

AYES [] B NO [] C Not sure []

Thank you for your participation in responding to these questions.

Appendix III: Questionnaire for Key Informants (Interviews)

CDE, Assistant CDE, DEO, Deputy DEO, DQASO'S, ZQASOs, Registry Officer (Clerk)

SECTION 1: BACKGROUND OF INTERVIEWEE AND INSTITUTION

- 1 Name of respondent: _____
- 2 Designation /Position _____
- 3 Years of service in the current position _____
- 4 How many schools are there in this Sub County? _____ **Public** _____ **Private** _____
- 5 What is the most common means of transport for this office? _____
- 6 How long does it take to reach the closest school to this office by the commonest means of transport?
(Hrs/mins) _____
- 7 How long does it take to reach the furthest school to this office by the commonest means of transport?
(Hrs/mins) _____
- 8 Are there unfilled vacancies in this office? 1 Yes [] 2 No []
- 9 What is the total number of staff in this office (including support staff)? _____
- 10 Is this office directly or indirectly involved in EMIS processes? _____

How (explain)

SECTION 2: ADMINISTRATIVE FACTORS INFLUENCING IMPLEMENTATION OF EMIS

A: GOVERNMENT POLICIES

11 To what extent do you agree that government policies on education do help in operational planning both at district, county and national levels?

A Very small extent [] B Small extent [] C Moderate extent [] D Very large extent []

12 Do you agree that government policies on education such as provision of resources to schools are driven by accurate and correct data gathered from schools?

A I disagree [] B Somewhat disagree [] C Somewhat agree [] D Fully agree []

13 In your opinion, what impact is likely to be realized through government policies on education management such as introduction of performance management contracts etc.?

A Major impact [] B Moderate impact [] C Minor impact [] D Not sure []

B: GOOD GOVERNANCE

14 To what extent do you think EMIS initiatives improve accountability and transparency in schools?

A Very small extent [] B Small extent [] C Moderate extent [] D Very large extent []

15 In your opinion, do you think the Head teachers in yours have the authority to make decisions that affect the daily operations of their schools? 1 Yes [] 2 No [] 3 Not sure []

Explain _____

16 How many complains (on average) have you /this office received from Head teachers in this Sub County in the past 30 days? _____

What was the nature of this complains?

17 Would you prefer EMIS activities be assigned to another school staff other than the Head teacher and Deputy? 1 Yes [] 2 No []
Why?

C: MANAGEMENT AND OPERATION OF EMIS

18 Does this office have an accounting unit? 1 Yes [] 2 No []

19 Does this office have a working telephone other than your personal cell phone?
1 Yes [] 2 No []

If No, why?

20 Does this office have electricity? 1 Yes [] 2 No []

If No, why?

21 Does this office have staff specifically assigned to EMIS activities? 1 Yes [] 2 No []

If Yes, how many staff members? _____

22 How many cars does this office have at present? _____

23 How many of these cars are in working condition today? _____

24 How many motorcycles are in working condition today? _____

25 How many of these motorcycles are in working condition today? _____

26 Is availability of fuel a problem? 1 Yes [] 2 No []

SECTION 3: SOCIAL FACTORS INFLUENCING IMPLEMENTATION OF EMIS

A: INFORMATION USE AND ACCEPTANCE

27 Do you find the EMIS form as adequate in capturing all information required from schools?
1 Yes [] 2 No []

28 Is this office confident in the data that is collected from schools? (i.e. Is it accurate and reliable to inform effective decision making?)

1 Yes [] 2 No []

If Yes, explain _____

29To what extent do you think teachers in this Sub County can acceptance to use a new innovation or technology aimed at improving EMIS use and application?

A Very small extent [] B Small extent [] C Moderate extent [] D Very large extent []

Explain your answer _____

30To what extent do you agree that technology or new innovation might compromise EMIS process that is in use currently?

A Very small extent [] B Small extent [] C Moderate extent [] D Very large extent []

Explain your answer _____

31Do you agree that the EMIS data collected in schools is commensurate to allocation received by those schools?

A I disagree [] B Somewhat disagree [] C Somewhat agree [] D Fully agree [] E Not sure []

B: CHANGE MANAGEMENT

32How likely are the Head teachers and Deputies able to accept new innovation supporting EMIS application such as provision of Computers or tablets to capture data in this Dub County?

A Very unlikely [] B Unlikely [] C Not sure [] D Likely [] E Very likely []

Explain _____

33Have there been any organizational changes (such as hiring of an EMIS expert, training on internal efficiency etc.) in this office in regards to EMIS operations in the past 1 year?

1 Yes [] 2 No []

Explain _____

34Have you received any internal complaints that EMIS is repetitive and time consuming and that new ways should be sought to improve the system?

1 Yes [] 2 No []

Explain _____

SECTION 4: STRATEGIC FACTORS INFLUENCING IMPLEMENTATION OF EMIS

A: ICT REFORMS

35Have you or this office ever received any ICT training or attended any workshop that is ICT related?

1 Yes [] 2 No []

36How many officers working on EMIS from this office have Computer training and knowledge?

37How many Computers does this office have at the moment for supporting EMIS activities?

38How many of these Computers are in use today?

39Are they sufficient for EMIS use? 1 Yes [] 2 No []

Explain _____

40 Does this office have an ICT quality policy? (Observe on the wall if possible)

1 Yes [] 2 No []

41 To what extent do you think providing schools with new technology such as laptops and Computers would improve EMIS capability and be sustainable in the long run?

A Very small extent [] B Small extent [] C Moderate extent [] D Very large extent []

Explain _____

B: INFORMATION NEEDS

42 What sources of information do you use to make decisions to support education activities?

- 1- DEB Records []
- 2- EMIS []
- 3- School Request []
- 4- All of the above []
- 5- Other []

43 How do you currently access data from EMIS?

- 1- No access []
- 2- Statistics published on paper []
- 3- Digital access via CD ROM or other storage []
- 4- Digital access via internet []

44 What is the most recent EMIS data that your office regularly uses to support decisions and activities?

Year _____

Comments _____

C: INSTITUTION BUILDING AND CAPACITY DEVELOPMENT

45 When was the last time this office received equipment such as Computers or capacity training towards EMIS initiative?

Year _____

Comments _____

46 How many trainings and workshops have been attended by staff on EMIS use and application?

47 Has this office ever organized capacity training on EMIS use and application for schools within this Sub County?

1 Yes [] 2 No []

If Yes, how many trainings were organized in the past year? _____

48 Has your office ever had requests from your schools asking for capacity building on EMIS application and use? 1 Yes [] 2 No []

If Yes, how many times have you got these requests in the past 1 year? _____

49 Has your office ever asked for funds to facilitate these trainings or workshops?

1 Yes [] 2 No []

SECTION 5: ECONOMIC FACTORS INFLUENCING IMPLEMENTATION OF EMIS

A: DONOR FUNDING

50 Does this office receive a budget to spend on EMIS initiatives? 1 Yes [] 2 No []

If Yes, is this budget sufficient? 1 Yes [] 2 No []

Explain _____

51 Do you support government initiatives to implement ICT reforms in schools such as provision of laptops to primary schools to improve learning outcomes?

1 Yes [] 2 No []

52Other than the Government support, has this office ever benefitted from an external donor support through provision of funds or equipment towards improving education quality in general?

1 Yes [] 2 No []

If Yes, how? _____

B: BUDGET ALLOTMENT

53Would you support the move to recognize the efforts of staff that work on EMIS in this office?

1 Yes [] 2 No []

54What kind of recognition would you vouch for in terms of recognition?

55Has this office ever received complaints from schools that EMIS is an additional work that is repetitive and time consuming? 1 Yes [] 2 No []

If Yes, explain _____

56Does EMIS have its separate budget or it comes combined with budget for other educational activities?

57What time of the year does this office normally receive funds for implementing EMIS activities after all EMIS data has been handed in by schools?

58Do you believe improvements in EMIS application processes can help enhance learning outcomes?

1 Yes [] 2 No []

Appendix IV: Kisumu East School Classification data

PUBLIC SCHOOLS

1	ANGIRA	31	OKAGO
2	ALANGO	32	ORONGO
3	AYARO	33	OFUNYU
4	ANYWANG'	34	RARIEDA KALOO
5	BUNGU	35	RAGUMO PRIMARY
6	BUOYE	36	RENJA
7	BUKNA	37	RWEYA
8	BWANDA	38	RAE KANYAIKA
9	CHIGA	39	RAE KAJULU
10	GOT NYABONDO	40	SENIOR CHIEF ONUNGA
11	KUNYA	41	ST. FRANCIS NYAMONGE
12	KIANJA	42	ST. JOHN'S MASAWA
13	KINDU R.C	43	ST. JONHN'S ORIANG
14	KADIJU	44	ST. MARK NYABERA
15	KIBOS	45	TIDO PRIMARY
16	KASAGAM	46	WANDIEGE
17	MAYENYA		
18	MBEME		
19	NYAMONGE		
20	NYAMASARIA		
21	NYAIMBO		
22	NYALUNYA		
23	NYATEGE		
24	ONG'ADI		
25	OMUNGI		
26	OGANGO		
27	OBINO		
28	OBWOLO		
29	OYOLA		
30	OKOK		


PRIVATE SCHOOLS


1	DISCIPLES OF MERCY
2	EMMANUEL ACT
3	FATHER'S HEART
4	GENESIS HIGHWAY
5	GOLDEN ELITES PREMIER
6	HAPPY DAY
7	JIRE SUCCESS
8	KET WANGI
9	KISUMU GLORY
10	LIFESPRINGS NURSERY
11	LUISA INTEGRATED
12	LIVINGSTREAMS
13	MARY MAGDALINE
14	MAISHA ACADEMY
15	PAIGETS KINGS AND QUEENS
16	ROSEVA PREMIER
17	ST. BRIGITS
18	ST. ELIZABETH
19	ST. ANNE'S ACADEMY KAJULU
20	ST. PAULS BEMANTO
21	ST. EMMANUEL ACADEMY
22	ST. MARIAH PREPARATORY
23	SHIELD OF FAITH
24	TEMUDO
25	URZUI SUBURBS
26	UTAMADUNI
27	JAMAA


Appendix V: Research Permit

THIS IS TO CERTIFY THAT:
MR. NYAMBAGA JOSIAH MUYESU
of UNIVERSITY OF NAIROBI, 825-40100
KISUMU, has been permitted to conduct
research in Kisumu County
on the topic: FACTORS INFLUENCING
IMPLEMENTATION OF EDUCATION
MANAGEMENT INFORMATION SYSTEM IN
KISUMU EAST SUB COUNTY, KISUMU
COUNTY KENYA
for the period ending:
19th July, 2017

Permit No. : NACOSTI/P/16/82811/12653
Date Of Issue : 19th July, 2016
Fee Received :Ksh 1000



Applicant's Signature



Director General
National Commission for Science, Technology and Innovation



CONDITIONS

- 1. You must report to the County Commissioner and the County Education Officer of the area before embarking on your research. Failure to do that may lead to the cancellation of your permit**
- 2. Government Officers will not be interviewed without prior appointment.**
- 3. No questionnaire will be used unless it has been approved.**
- 4. Excavation, filming and collection of biological specimens are subject to further permission from the relevant Government Ministries.**
- 5. You are required to submit at least two(2) hard copies and one(1) soft copy of your final report.**
- 6. The Government of Kenya reserves the right to modify the conditions of this permit including its cancellation without notice**


REPUBLIC OF KENYA


NACOSTI
National Commission for Science, Technology and Innovation

RESEARCH CLEARANCE PERMIT

Serial No. A 10156
CONDITIONS: see back page

Appendix VI: Map of Study Area

