THE ROLE OF INFORMATION COMMUNICATION TECHNOLOGY INTEGRATION IN SUPPORTING SECONDARY SCHOOL ADMINISTRATIVE ACTIVITIES IN NZAUI SUB-COUNTY, MAKUENI COUNTY, KENYA

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A Research Project Submitted in Partial Fulfilment of the Requirements for the Award of Master Degree in Educational Administration of Machakos University

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DECLARATION

This research project is my original work and has not been presented for a degree in any other university.

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Supervisors' Approval

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DEDICATION

I dedicate this work to my dear husband Julius Wambua who has been there for me physically, spiritually, financially and all other aspects whenever I needed him. To my dear children Brenda, Samuel and Breanna, in one way or the other this project limited my contact hours with you but for sure it will pay. May God bless you abundantly.

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TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

LIST OF ABBREVIATIONS AND ACRONYMS

BECTA: British Educational Communications and Technology Agency

BOM: Board of Management

CCTV: Closed –Circuit Television

CEMASTEA: Centre for Mathematics Science and Technology Education in Africa

ICT: Information Communication Technology

MOE: Ministry of Education

NACOSTI: National Commission for Science, Technology and Innovation

NEMIS: National Education Management Information System

NEPAD: New Partnership for Africa's Development

OECD: Organization for Economic Co-operation and Development

PEU: Perceived Ease of Use

PTA: Parents Teachers Association

PU: Perceived Usefulness

SPSS: Statistical Package for Social Sciences

TAM: Technology Acceptance Model

TSC: Teachers Service Commission

UNESCO: United Nations Educational Scientific and Cultural Organization

ABSTRACT

The purpose of this study was to investigate the role of Information Communication Technology (ICT) integration in supporting school administrative activities in secondary schools in, Nzaui Sub-County, Makueni County, Kenya. Information Communication Technology has immense benefits in secondary school administration ranging from monitoring of teachers, records management and upholding financing transparency through digital control among other benefits. The rate of its uptake has not been fully researched in Nzaui Sub-County, Makueni County and that's the need for this study. The study was guided by three objectives: to determine the role of ICT integration in instructional supervision of teachers; to investigate the role of ICT integration in administration records management; and to evaluate the role of ICT integration in financial management in public secondary schools in Kenya. The study was grounded on the Technology Acceptance Model by Fred Davis. The study adopted a descriptive study design and a target population of 396 members of staff in 56 schools within the sub-county. The study sample size was 105 respondents distributed as follows: principals (14), deputy principals (15), deans of studies (13), ICT officers/ teachers (16), bursars (16), librarians (14) and secretaries (17) who were obtained by stratified random sampling technique. Data were collected using questionnaires, observation and interview schedules and analyzed by descriptive and correlational statistics using Statistical Package for Social Sciences version 27. Thematic narrations for qualitative data was done. The results of the first objective showed that ICT integration influences instructional supervision of teachers to a great extent (57.2% of the respondents). The Pearson's correlation analysis was computed and the value was 0.983 implying that there was a very strong positive relationship between ICT and the support of school administrative activities. The results of the second objective showed that that integration of ICT influenced records management to a large extent (52.9% of the respondents). A Pearson's correlation analysis computed produced a value of 0.871 implying that there is a very strong positive relationship between ICT integration in records management and the support of school administrative activities. The third objective was about the influence of ICT in financial management in schools. The results showed that it influenced to a moderate extent (47.6% of the respondents). The Pearson's Correlation analysis value was 0.854 which implies that there is a very strong positive relationship between ICT integration in financial management and the support of school administrative activities. The findings of this study are of great significance to the school principals, teachers and other stakeholders in the education sector so as to better understand the role played by the integration of ICT in the school administrative activities. The study concludes that there is statistically significance relationship between independent and dependent variables and that the ICT integration will greatly enhance administrative functions the school. The study recommends that the school principals should train the teachers on how to integrate ICT in the delivery of the curriculum. The school administrators should also automate all the record management functions and activities in schools using ICT. Finally, the school administration should upgrade the ICT systems for financial management so that they are able to integrate all the functions and activities applied in schools.

CHAPTER ONE

INTRODUCTION

1.1 Background to the Study

The use of Information Communication Technology has permeated in all sectors of the economy drastically revolutionizing how people work over because of its great potential of enhancing the organizational efficiency and performance. Such sectors include business transactions through e-commerce, tourism, banking and education through e-learning platforms. Information Communication Technology (ICT) covers a wide range of tools, services, equipment and infrastructure such as computer systems, internet service provision, libraries and documentation centres, telecommunications equipment, network-based information services, media and broadcasting, commercial information providers and any other communication and information related activities. The use of ICT will be a key enabler in the achievement of the Sustainable Development Goal Number Four under education: "*Ensure inclusive and equitable quality education and promote life-long learning opportunities for all'* (United Nations, 2012).

According to Adu and Olatundun (2013), Information Communication Technology is a basic building block in the modern society that is regarded as a basic skill in education, just like skills in reading, speaking, writing and numeracy. Knowledge of the use of ICT has the huge potential of unlocking many opportunities in the modern world, especially so in the education sector. The modern world requires ICT-literate people who can participate actively in the knowledge economy either by being creators or consumers of the technology knowledge. The United Nations Educational Scientific and Cultural Organization (2013) identifies ICT as a key pillar and enabler that can

enhance equity and universal access to education while promoting efficient management of the school resources and personnel.

The use of ICT in educational institutions is widely accepted across the globe. In most educational settings, learners are permitted to use ICT platforms such as Facebook, Twitter and Google Classrooms, Zoom, Microsoft Teams for interactive forum such as discussions, presentations and also for uploading and downloading files, submitting and receiving assignments and even for sitting tests and examinations. The integration of ICT leads to the computerization of the education sector which may improve the effectiveness and efficiency index in the management practices of not only at school level, but also the entire education sector (Trucano, 2009).

Most schools around the world are moving towards integrating ICT in their operations, both in the teaching and learning process and other management functions. Computers are used for lesson preparations, record keeping, management planning and administration, assessment and tracking of learners' progress, monitoring of the staff performance and communication to parents Chen (2009). Therefore, schools should have a comprehensive ICT plan that addresses the technology needs of the various school players, that is, the school administration, the teachers, non-teaching staff, students, parents and even suppliers of goods and services. The use of ICT as a teaching tool engages the learners thus improving the quality of the teaching and learning process. Furthermore, ICT can be used in administrative processes such as monitoring and evaluation, human resource management and resource sharing (Jegede, Ebio, & Iroegbu, 2019).

The use of the ICT in school management is relatively new concept especially in developing countries in Africa unlike the developed countries. Mang'ando (2015)

observes that countries like China, Thailand and India have embraced the use of ICT in many of their school education system and programmes such as examinations and coordination and supervision of school functions. A study conducted by Muema (2015) in Tanzania on the role of ICT in financial management in schools established that majority of the secondary schools had not harnessed the huge potential offered by ICT integration in school management processes and programmes. Most schools still preferred to use manual processes in their financial management systems rather than automate them using ICT. However, the use of ICT has been utilized more in education instruction than in administration. A study done by the Swedish National Agency for School Improvement (2015) established that the integration of ICT in schools in Sweden had a great positive impact on the overall administration of and management of schools.

Mauritius, in partnership with the New Partnership for Africa's Development (NEPAD) introduced e-learning programme in schools code named SANKORE Project. The main aim of the project was to increase accessibility to ICT by students and hence bridge the digital divide between the developed countries and African countries, (Bahadur and Oogarah, 2013). However, the objectives of this project were not fully achieved because of some schools were not ready and unwilling to integrate ICT in their operations. Despite the challenges experienced, the Ministry of Education is Mauritius was determined to integrate ICT in all the activities and programmes of the school, both academic and administrative. The government is steadily steering forwards towards developing an adaptive workforce that is IT savvy for the modern knowledge-based economy while adopting ICT as a strategic enabler in all the educational and training institutions within the country (Sohawon, Panday & Baxou, 2015).

In Kenya, the government formulated the ICT strategic policy paper in 2006 and revamped into the ICT policy of 2019. Both the paper and the policy advocate for the adoption of ICT in the operations of the three arms of government. The Ministry of Education has adopted the use of ICT in the management of learners' records in primary and secondary schools across the country through the National Education Management Information System (NEMIS) while Kenya National Examinations has equally adopted an online system for the registration of candidates at primary, secondary and tertiary institutions.

A study done by Katitia, Tanui, and Oruta, (2019) in Kajiado County, Kenya, established that public schools can leverage on the opportunities presented by the integration of ICT in the management of schools. For instance, ICT can increase the effectiveness and efficiency of the management of students' records and make available information on students on real time bases for ease of communication from and to various stakeholders either within or outside the school. The Organization for Economic Cooperation and Development (OECD, 2005) recommends the use of ICT in schools in making information widely available to parents, students and other interested persons by the school having a central school management web where parents can access remotely using secure passwords.

School administration involves coordinating a number of sub systems in the school so that they work seamlessly in order to avoid lapses in the general running of the school. According to Oyedemi (2015) there are six subsystems that should be operated or managed well by the school administrators on a day-day basis: Planning subsystem, Communication subsystem, Reporting subsystem, Knowledge Management subsystem, Decision making subsystem and Document Processing subsystem.

According to Maryanne (2018) all these subsystems can be efficiently managed if there is a good ICT system that can integrate all or some of these subsystems.

The success or failure of the school administrative functions largely depends on the school principal who is the chief administrative officer of the school. Therefore, the principal should be equipped with the right management tools that make will make school administrative activities more effective and efficient (Owuor and Odera, 2019). Further, Owuor and Odera (2019) assert that the principal is expected to be a specialist and a supervisor who collaborates with the teachers and other non-teaching staff members when implementing school programmes and also running of the administrative functions.

Katitia, et al, (2019) assert that the school principals are charged with the role of managing many tasks in the school such as finances, school plant, educational resources, school community relations, students and staff, curriculum instruction and daily activities. All these programmes and events have to be monitored and recorded in the school record or books for reference purposes. The principal can avoid recording all these details manually by using ICT tools to monitor, record, store and report on the progress of these programmes and activities. It is therefore crucial for the school head to be a champion for ICT integration.

The principal's main responsibility is the management of the school programmes by supervising both teaching and non-teaching staff in their discharge of duties. To this end, a study was conducted by Kamotho (2019) on the 'Influence of principals' supervisory role on teachers' job performance in public secondary schools in Kangundo, Machakos County, Kenya' The study aimed at investigating whether the principal does class observations/visitations, checks teachers' professional records,

provides teaching and learning resources and conducts job evaluations for teachers. The study employed a cross-sectional survey study design and sampled 168 respondents, of which 8 were principals using stratified random sampling technique. The data was collected using the interview guide and questionnaires and analysed into descriptive and correlation analysis.

The findings of the study by Kamotho (2019) showed that most principals did not conduct regular teacher classroom observations, neither did they check on whether the teachers had professional documents. The study recommended that there is need for the principals to plan for the supervision process of the teachers. The study further recommended the use of ICT as one of the means of monitoring teachers because physical checking was deemed as cumbersome, ineffective and time-consuming. Therefore, principals can use ICT can act as an effective tool monitoring of teachers especially in class attendance and arrival and departure time. Furthermore, the principals should be sensitized on the importance of integrating ICT in school administrative processes so that they can effectively and efficiently manage schools (Kamotho, 2019).

Managing a modern school has increasingly become more complex because of the many programmes and the stakeholders involved. There is therefore the need to adopt new, innovative and powerful tools and approaches of running these schools, a duty which is carried by the school administrators. These programmes include examinations, communications, record keeping, teacher instructional monitoring, timetabling, planning and budgeting systems, knowledge management, security and safety installations and financial management and procurement among other programmes. The consequence of not running this programmes well is the poor communication

experienced between the school administrators and the teachers, parents and other external interested parties such as the governments.

For all academic, non-academic and administrative programmes to run smoothly in a school or educational institution, there is need for an ICT system that can integrate some of administrative programmes and activities for ease of operations. The use of ICT can be one of the ways of achieving this management and administrative effectiveness. The use of ICT in school administration in Kenya is a new concept that is now slowly taking shape though it has not received much attention and research. This study therefore seeks to evaluate the role of the ICT integration in supporting the school administration in operational managements of secondary schools in Kenya using Nzaui Sub-County in Makueni County as a case study.

1.2 Statement of the Problem

Although ICT integration in administration is highly valued for efficient curriculum supervision, personnel management, financial management, resource mobilization and student supervision, the extent to which this has been embraced by principals in Nzaui Sub County has not been fully investigated. Its role in secondary schools cannot be overemphasized due to the many advantages associated with it including easy presentation, information access, monitoring, evaluation and corporation analysis. Information Communication Technology is seen as a catalyst for change and accessing information has been identified in the whole world as a significant tool in facilitating new models of school administration. However, most secondary schools' administrators in Kenya have not yet fully integrated ICT in their administration. This is due to limited resources, low attitude and competence of school principals towards

ICT and low ICT erudition skills. This becomes the paucity for this study in Nzaui sub county Makueni County.

The government of Kenya has considerably invested significant resources in education transformation by supplying ICT amenities and training of teachers in ICT incorporation in the curriculum. A study conducted by Atandi (2019) in Nairobi schools established that only 2.1% of schools have integrated ICT into teaching and management. These research findings from the neighbouring counties clearly show that the uptake of ICT in school administration in Kenya in still low though the benefits of integrating ICT in school management are immense. Therefore, there is need to investigate the rate and role of ICT integration in secondary schools in Kenya. This study has focussed on Nzaui Sub-County as a case study in order to evaluate the extent to which ICT integration in school administration has been adopted by schools in the area.

There has been no published study conducted to shed light on the degree of ICT integration in Nzaui Sub-county and thus the current study aims to add on the scarcity of information on this region of interest. The current study sought to investigate the extent of ICT integration in administration of secondary schools in Nzaui Sub-County, Makueni County, Kenya.

1.3 Purpose of the Study

The purpose of this study was to investigate the role of ICT integration in supporting administrative activities in secondary schools in Nzaui Sub-County, Makueni County, Kenya.

1.3.1 Objectives of the Study

The following three objectives guided this study:

i. To determine the role of ICT integration in instructional supervision of secondary school teachers in Nzaui Sub-County.
ii. To investigate the role of ICT integration in administration records management in secondary schools in Nzaui Sub-County.
iii. To evaluate the role of ICT integration in financial management in secondary schools Nzaui-Sub County.

1.3.2 Research Questions

i. What is the role of ICT integration in instructional supervision of teachers in Nzaui Sub-county?
ii. What is the role of ICT integration in administrative records management in secondary schools in Nzaui Sub-County?
iii. How does ICT integration support financial management in secondary schools in Nzaui-Sub County?

1.4 Significance of the Study

The integration of ICT in the administration of schools is an emerging strategy that is being adopted by many school in Kenya. This is therefore the main motivation behind this study. The results of this study may be of great significance to the school principals and other stakeholders in the education sector such as the policy makers so that they can better understand the important role played by the integration of ICT in the school administration. The findings will further help the policy makers and principals to formulate and implement ICT plans for the entire management programmes. In addition, the findings will be of great benefit to the teachers, especially those who have not embraced ICT fully in the teaching and learning process, so that they can be encouraged to embrace the utility of ICT when dispensing their teaching duties.

1.5 Delimitations and Limitations of the Study

1.5.1 Delimitations of the Study

This study was delimited to the objectives of the study which are: to determine the role of ICT integration in instructional supervision of secondary school teachers in Nzaui Sub-County; to determine the role of ICT integration in administration records management in secondary schools in Nzaui Sub-County; and to determine the role of ICT in financial management in secondary schools Nzaui-Sub County and the area of study which is Nzaui Sub-County in Makueni County. Further, the research only included public secondary schools in Nzaui Sub County. The study further was delimited to the 8 strata of respondents who are the Sub County Director of Education Nzaui Sub-County, principals, deputy principals, deans of studies, ICT teachers, secretaries, librarians and bursars.

1.5.2 Limitations of the Study

The main limitation that the researcher encountered is that some respondents especially the school principals were not willing to participate in the study because of the fear of revealing some information about their school. However, to mitigate this, the researcher assured them of their privacy and the confidentially of the information given. Further, the researcher sought an introductory letter from the university clearly stating that the purpose of the study is for academic purposes only. Another limitation of this study is that this research was conducted in a few-select secondary schools Nzaui Sub-County in Makueni County and therefore the findings may not be fully sufficient to be applied in other regions of the country through generalization.

1.6 Basic Assumptions of the Study

The study assumed that all secondary schools in Nzaui Sub-County, Makueni County had integrated the use of ICT in their management operations. The study further assumed that all the expected research respondents had prior knowledge or experience on the use and utility of ICT in the administration of schools in the Sub-County.

1.7 Theoretical Framework

1.7.1 The Technology Acceptance Model

This study was grounded on the Technology Acceptance Model (TAM) which was first developed by Fred Davis, (1989). The model is an adaptation of the 'Reasoned Action Theory' by Ajzen and Fishbein, (1980). The model expounds on how people come to accept and use a new innovation or technology (ICT). The model suggests that potential users of a new technology will tend to accept it basing on the perceived usefulness and ease of use of the technology. The acceptance of a new technology is therefore a behavioural attribute which relies on the user's attitude towards the technology. The Perceived Usefulness (PU) is the extent or degree to which the new technology is believed to enhance the task performance of an individual while Perceived Ease of Use (PEU) is the degree to which the new technology will be free of mental or physical effort, Venkatesh et al, (2012).

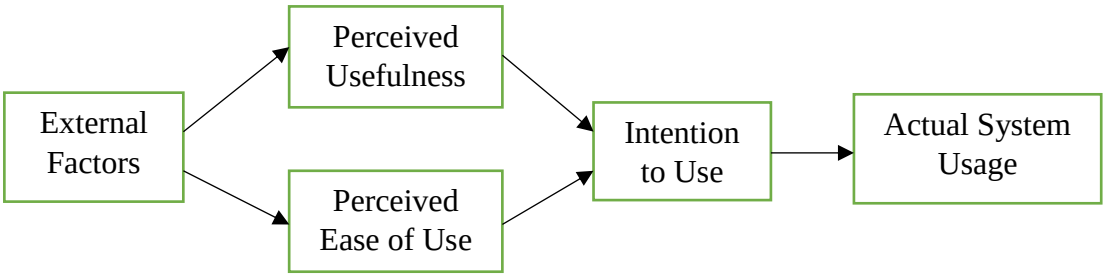

Figure 1.1: The Technology Acceptance Model

Source: Venkatesh et al, (2012)

This model is very relevant to this study because it addresses the key factors of attitude and perceived utility of a new technology as the major determinants of the acceptance, adoption and integration of technology and innovation in the management of schools. The school principals will consider whether the new technology will be useful and easy to use in the running of the administrative functions as captured in the model 1.2.

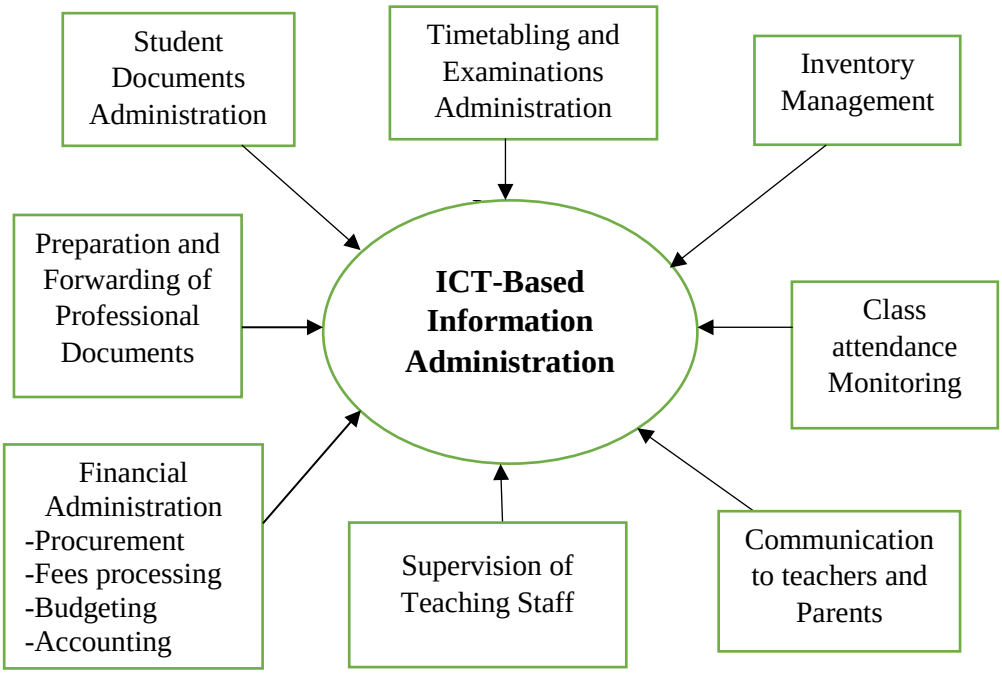

Figure 1.2: ICT Model for Information Administration

The School principal needs an effective and efficient ICT system that integrates all or most of the above administrative functions for ease of running the school, especially if the school is large and complex. The school integrated ICT system can also be used for security surveillance of the whole school through the use of Closed Circuit Television (CCTV) which can be installed at strategic positions in the school with a monitor screen in the principal's or deputy principal's office. The principal can also access the system remotely using either a mobile phone or a computer. Such strategic places include the dormitories, the library, the dining hall, the laboratories, school gate, classrooms,

corridors, parking area and the playing fields. The CCTV coverage will monitor the activities of the teachers, students and the non-teaching staff.

1.8 Conceptual Framework

A conceptual framework is the diagrammatic representation of the relationship between the variables of the study. Figure 1.3 shows the adopted conceptual framework for this study showing the linear relationship between the independent, moderating and dependent variables.

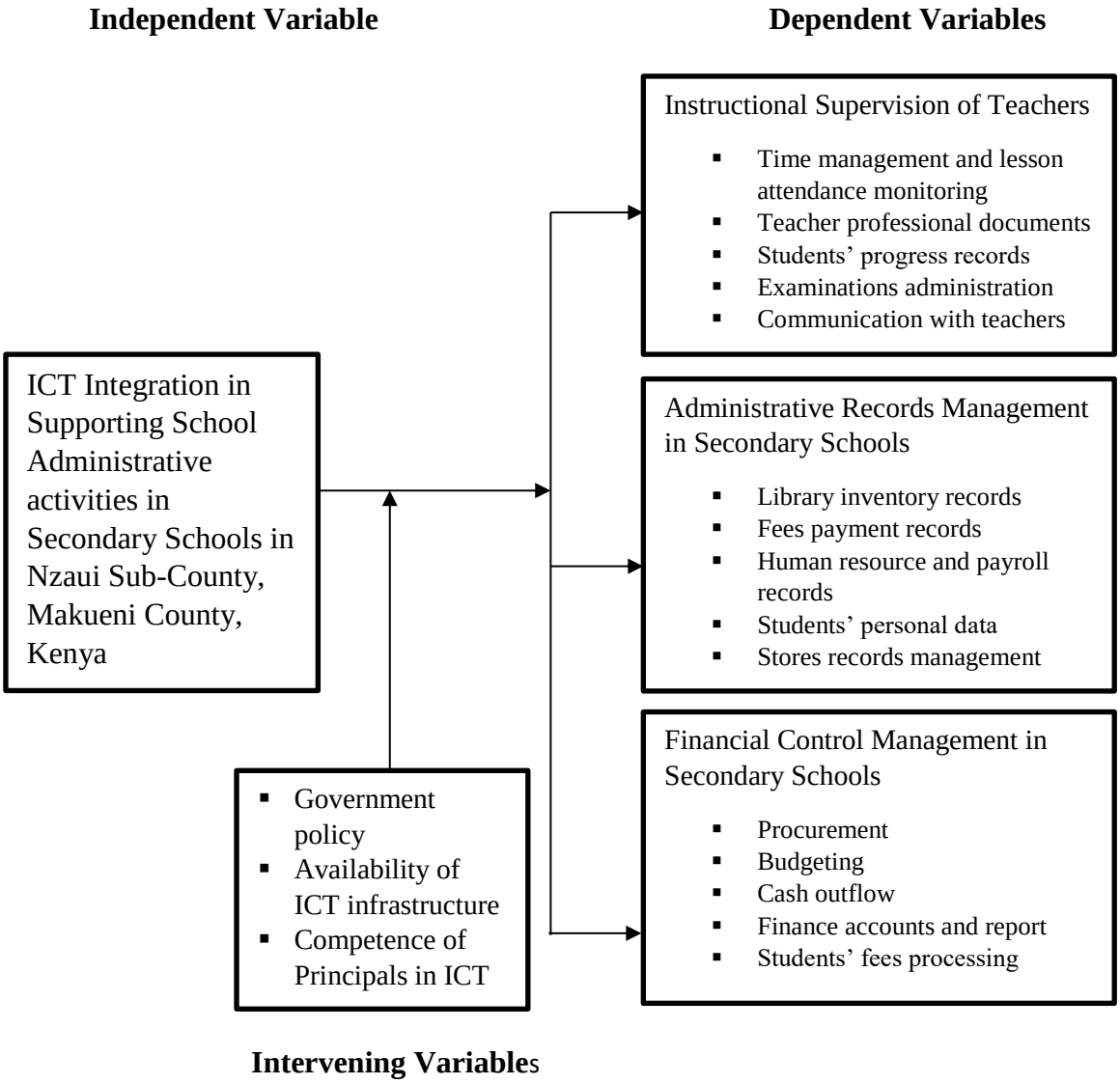

Figure 1.3: Conceptual Framework

1.8.1 Interpretation of Variables

The school administration can use ICT in the supervision of teachers by ensuring that teachers prepare and submit professional documents using the ICT interactive platforms such as the school intranet. The integration of ICT in school administration can be very helpful in record and inventory management such as textbooks and stationery. The integration of ICT in financial management can help promote the principles of accountability and transparency while making the control of finances more effective efficient. However, for this to happen successfully, the school should have sufficient ICT infrastructure and the school principal should be competent in the use of ICT tools. Therefore, these are the intervening variables of the study. The likely impact of the intervening variables on the outcome of the study has been addressed through the assumptions of the study that all schools in Nzaui Sub-County have integrated ICT in their operations and that the school principals are competent to handle and operate ICT tools and devices. This reduces the subjective error in sampling of schools and respondents who takes part in such a study.

1.9 Operational Definition of Terms

Administrative Activities: Refers to functions carried out by schools administrators such as teacher supervision, accounting and financial management, inventory management and documentation and communication.

Computer Literacy: Refers to people being able to use computer technology to facilitate the completion of necessary tasks and the solution of problems.

Control of School Finances: This includes formulating profit and loss account, capture students' fees payment, preparation of payrolls, making of school budgets and auditing financial transactions by use of ICT for effective planning and decision making.

Curriculum and Instruction: These are all tasks and experiences that involve preparation of schemes of work, records of work, making school timetables, planning and delivery of lessons, and evaluation of students.

Educational Administration: The process by which formalized system, principles, methods and practices are used in educational institutions (as organisation) are used to control, supervise, plan and make decisions about various activities of the organization on the basis of established authority and organizational goals.

Hardware:	Refers to tangible components of computers including processors, input and output devices
ICT:	These are also electronic technologies used for accessing, processing, gathering, manipulating, and presenting or communicating information in the education system.
ICT literacy:	This refers to being able to handle a wide range of various computer applications for various purposes.
ICT Infrastructure:	This term refers to ICT facilities such as Internet connections, computers, ICT technicians, televisions, CCTV Cameras,
ICT Integration:	This refers to using any ICT tool such as the internet, e- learning technologies, computers, television and compact discs to assist in the administration of the school.
Role of ICT:	This refers to the function or part played by the ICT as a tool in the running of school administrative functions.
School Administrators:	This term has been used to refer to those who are involved in day to day administration of schools. e.g. B.O.M Chairperson P.T.A Chairperson, Principals, Deputy Principals, Deans of Studies, Senior Masters among others.

Secondary School:	This refers to an institution that offers secondary education according to the national curriculum of the Kenyan Government.
Software:	Refers to sets of instructions and data used by computers, also referred to as computer programmes.

1.10 Organization of the Study

This research project is organized into five chapters: The first chapter, which is the introduction, discusses the background to the study including the objectives and the significance of the study; the second chapter reviews the literature on the objectives of the study; the third chapter explores the research methodology that was used for data collection and the methods of data analysis and presentation; the fourth chapter discusses the findings of the research basing on the data collected; lastly, chapter five gives the summary of the findings, the conclusions and the recommendations of the study.

CHAPTER TWO

LITERATURE REVIEW

2.1 Introduction

This chapter reviews both theoretical and empirical literature on the variables of this study. The purpose of the study was to investigate the role of information communication technology integration in supporting administrative activities in secondary schools. The chapter also covers the summary of the literature review and the research gaps that this study intends to fill.

2.2 Review of Empirical Literature

Several empirical studies have been conducted both internationally and locally on the role of ICT integration in the running of educational institutions and specifically schools. In Malaysia, a study was done by Baharuldin, Jamaluddin and Shaharom (2019) on 'The role of school administrative support in the integration of ICT into the classrooms in Pahang'. The study used a survey research design and stratified cluster sampling technique to collect data from 530 teachers.

The findings of the study by Baharuldin, Jamaluddin and Shaharom (2019) showed that there is a statistically significant relationship ($p < .05$) between school administrative support and teachers' ICT competence and further that the school principals play an important role in integrating ICT into the classroom. The school administrators should therefore ensure that schools are well-equipped with ICT facilities for both learning and administrative purposes. This study however, focused more on the ICT literacy levels of the school principals and the teachers and the impact it has on the operational performance of their respective duties and less on the role of

ICT in aiding administrative functions in schools Malaysia (Baharuldin, Jamaluddin & Shaharom, 2019).

In Pakistan, a study was conducted by Qureshi (2016) on 'The Efficient Use of ICT in Administration: A Case from Mehran University of Engineering and Technology, Jamshoro'. The study employed an exploratory study design with a mixed research methodology. Data was collected from employees working in main branch of administration as well as administration offices at different departments and institutions. The findings showed that ICT was not found to be as effective as it supposed be in administration, and some of the reasons given were lack of appropriate resources particularly management information system with training and monitoring mechanism. Therefore, the universities were using more manual system and people are less encouraged to use more ICT. This study did not explore the various administrative functions that can be leveraged on ICT in educational institutions unlike this current study.

In Ghana, Bosu (2019) carried out a study on 'The Role and Use of ICT in Administrative Activities in Higher Education Institutions: The Views of Administrators in Higher Educational Institutions'. The study used an exploratory study design to collect data from a sample size of 18 respondents using purposive sampling technique and semi-structured interviews. Data was collected from universities, technical colleges and nursing training colleges. The findings revealed that the use of ICT has fundamentally changed the majority of administrative practices and procedures, with the administrators agreeing that technology is an essential part of their work and that it played a critical role in impacting positively on the quality of administrators' work.

Studies have been done locally on the role of ICT in school administration, Katitia, Tanui and Oruta (2019), conducted a study in Kajiado County on 'The Role of School Administration in Implementation of ICT in Human Resources Administration in Public Secondary Schools'. The study employed a descriptive survey design to sample 18 principals and 366 teachers using the questionnaire as the main data collection instrument. The findings showed that that use and implementation of ICT in all the departments of school administration of the public schools in Kajiado County was very low. The study concluded that most of the public secondary schools in Kajiado County had not embraced ICT in various areas of administration. This study restricted itself to the use of ICT in staff management and not the broader aspects of administration, which this study intended to cover.

A study was conducted by Kiage (2023) on 'The 'Adoption of Information and Communication Technology in Teaching and Learning in Secondary Schools in Nairobi County, Kenya'. The study used a descriptive survey design to collect data from 164 teachers and 19 principals within Nairobi County using the questionnaire as the main instrument. The study findings showed that most schools had inadequate ICT facilities for full roll out of the integration of ICT in the school administration though the teachers supported the need for students to use ICT as a tool for practice and learning. However, this study focused more on the use of ICT in teaching and learning and less on administrative functions.

In another study by Kirui et al, (2022) on 'The influence of frequency of use of ICT on effective management of public secondary schools in Uasin-Gishu County', the findings that the ICT frequency of use and effective school management had a moderate relationship demonstrating that whenever school administrators' frequently

employ ICT facilities in their management functions there was a significant improvement on effective management of schools.. On the basis of these findings, it was concluded that the Ministry of Education should encourage frequent use of ICTs in school management by conducting training in the area of ICT (Kirui et al, 2022).

A related study was conducted in Meru County by Mutwiri, Kafwa and Kyalo (2017) on 'The Role of Principals in Information and Communications Technology (ICT) Policy Formulation in Public Secondary Schools in Kenya'. The study employed a descriptive study design to collect data from 211 principals and 335 teachers using random sampling techniques. The findings indicate that schools lacked compressive ICT policy on the use of ICT in teaching and learning and also in administrative functions. Therefore, there was a low uptake of ICT in the operations of the schools.

2. 3 The Concept and Role of ICT Integration in School Administration

Integration of the ICT in school administrative activities refers to the use of ICT tools such as internet, computer, cameras and television in the running of administrative activities such as teacher supervision, accounting and financial management, inventory management and documentation. According to Setiawan, Satori and Munir (2018), the role of ICT in school administration cannot be overstated because it can aid in ensuring efficiency and effectiveness of the running of schools. According to the United Nations Education and Scientific and Cultural Organization (UNESCO) (2021), the integration of ICT should be used extensively in school administration especially in this modern digital age to promote the principles of transparency, accountability and efficiency. Therefore, the school administrators and staff, both teaching and non-teaching should be ICT literate in order to handle the ICT tools for operations of the school.

In an effort to integrate ICT into the school administrative and learning programs, the Republic of Korea launched an initiative in 2011 dubbed Self-directed, Motivated, Adaptive, Resource-enriched, and Technology-embedded (SMART) Education. The initiative's main goal was to digitalize educational contents by 2015 to reflect modern changes of the 21st century and to utilize ICT. Another objective was to integrate ICT in virtually all administrative functions in schools. The programme is an eco-system that supports students, teachers, school administrators and parents, and promotes partnerships with the national and local government and the private sector e.g. the SMART education platform The programme has aided in the running of school administrative and curricular activities and it's also a tool for communication with both internal and external stakeholders in the education sector (UNESCO, 2019).

In Europe, some countries like Denmark, Netherlands, Germany, Norway and Turkey have adopted a programme known as "Smart Data and Digital Technology in Education'. The programme integrates all school management functions such as learner assessment, learning analytics for parents, teacher monitoring, and other school administrative functions such as financial and inventory systems, (OECD, 2020). The programme enables teachers to use it for preparation for notes, teaching-learning resources and examination. Further, the application is used to prepare timetable, teaching plan, schemes of work and school reports, both academic and administrative (OECD, 2020).

According to Ukanwa and Chiemeka (2021), ICT tools and applications can be used by administrative staff for doing their daily responsibilities faster and more accurate. The staff uses different types of tools to handle financial work, maintain communication, and keep records, process documents and to collect data. Some of the

areas that ICT can be applied include recording school financial documents such as balance sheet, pay slip, audit reports. Non-salary grants, and stocks keeping as well as student evaluation report and overall student records for future references (Ukanwa and Chiemeka, 2021).

Kiage (2023) in a study in Nairobi County, Kenya posits that integration of ICT in school administration will not only improve efficiency and but also enhance other management functions such as planning organizing, monitoring and controlling. Therefore, school principals need to possess ICT knowledge and skills. Further, the ICT tools can be used to facilitate the teachers' professional activities and also be used for communication with other stakeholders through emails, chat rooms and social media platforms.

2.4 The Role of ICT in Instructional Supervision of Teachers in Secondary Schools

The school principal is expected to supervise both teaching and non-teaching as part of his or her job responsibility. He should constantly collect data about the staff under his control for better decision making as far as the implementation of the school programmes in concerned. Therefore, the deployment of ICT can be an instrumental tool in the supervision of teachers and other non-teaching staff in the school. The school principal should be a champion of the integration of ICT in school administrative functions.

In a study conducted by Mbithe (2016) in Machakos Sub-County on the integration of ICT in teaching and learning in public secondary schools in the sub-county, it established that there was greater uptake and acceptance of ICT in administrative functions in schools headed by a principal who had higher levels of proficiency in ICT

than in schools whose principal had lower levels of ICT proficiency. In another study conducted in Nyamira County by Abuga (2014) to find out whether the school principals were using ICT in teacher supervision. The findings showed that majority of the head teachers had not embraced ICT in teacher supervision because they had not done any form of training on the same. Chepkonga, (2015) carried out a study on the role of ICT integration in the management in public secondary schools in Nairobi County, Kenya. The findings of the study showed that there is a significant positive relationship between the adoption of ICT by school principals and the overall school administrative functions.

2.4.1 The Integration of ICT in Time Management in Schools

A good integrated ICT system can be used to collect data on all the staff members which will be very helpful in appraising the members. According to Mulinge (2020), such data include the arrival and departure time from school, the amount of time that a teacher attends a lesson, capturing present and absent members of staff and even managing leave days or official leave-out time. Katitia, Tanui, & Oruta, (2019) agree with the sentiments of Mulinge, (2020) and opine that ICT will help the school in collecting such vital information and distributing it to other departments that can utilize it for decision making. The scholars add that ICT can be used to monitor the performance of staff in their discharge of duties. According to Shah (2014), availability of such data helps the school administrators in making quality decisions about the productivity levels of the staff.

A study conducted by Abdul & Zohora (2012) in Malaysia in which the school principals were the main respondents on the role of ICT integration in school administration, established that ICT was very instrumental in instructional and personnel management especially in very big schools. The principals who had not

embraced ICT in their operations found it very time consuming and burdensome and therefore could not function effectively and efficiently without the help of ICT. Another study was conducted in Cyrus by Papaioannou and Charalambors (2011) on the use of ICT by principals on the supervision of time management of teachers. The study collected data from 250 principals using a mixed method approach and descriptive study design. The study utilized the questionnaire as the main research instruments. The findings indicated a positive correlation between the use of ICT and the supervision of time management of teachers.

2.4.2 The Integration of ICT in Professional Documents in Schools

Information Communication Technology can also be used in the preparation of the professional documents and submission through e-mail or shared school intranet platform. Such professional documents the timetable, academic reports, lesson plans, notices, record of work covered, schemes of work and other academic and non-academic reports. According to Muhammad (2014), teachers can submit these documents to their supervisors with ease regardless of their location. Through an interactive internal network platform, the supervisor or the school administration is able to assess the quality of the documents submitted and give a feedback based on the expected standards of assessment. Through the same platform, the school administrators can communicate important information to the teachers and other non-teaching staff (Onyekachi & Mohammed, 2021). According to a study done in Ghana by Trucano (2006), teachers who use ICT as a tool for teaching are more confident and consistently use it in preparation and delivery of lessons. The lessons are perceived to be easier to understand, interesting and fun. The students appreciate this by enhancing the quality of results which is a motivator.

2.4.3 The Integration of ICT in Students Progress Reports

Information Communication Technology (ICT) has the potential to transform the teaching and learning process by improving the teacher's design work and creating a collaborative learning environment. The use of ICT can be used to monitor the progress of students' academic performance through integration of systems that can track and generate data that can help teachers and school administrators to make informed decisions about a given student. A study conducted by Alazzam, Bakar, Hamzah, & Asimiran (2012) in Pakistani schools established that schools that had incorporated ICT in the teaching and learning process had adopted e-learning system that enabled students to access learning materials, assignments, assessment scores and even interact with their teachers through an interface created in the system.

In a study conducted in Malaysia by Singh and Chan (2014) on the level of adoption of ICT in the management of the students' academic progress, over 80% of the teachers were comfortable using the integrated ICT programme to track the learners' academic progress. Locally, in a study carried out in Kiambu County by Njathi, Ngaruiya and Maithya (2018) on the integration of technology in the administrative functions, as quoted by Muia (2021), the findings showed that over 90% of the principals admitted that they use computers at very low levels, mostly for storage of information about students and that only 23.5% of the principals stated that they use computers for monitoring the academic progress of students.

2.4.4 The Use of ICT in Examinations Preparation and Administration

The use of ICT can also be used to keep track of learner's academic progress by analyzing the performance in every test or exam. Schools that have large populations of students will find it a challenge to conduct examinations and analyse the results

without the use of ICT. An efficient ICT system will be able to collect, collate, analyse and store data on the specific and general performance of learners. Muhammad (2014) avers that a comprehensive examinations management system should be able to not only analyse learner's performance but also communicate the same information to teachers, parents and the school administration.

Adoption of an effective integrated ICT-enabled system for examination preparation and administration has been a challenge in some schools especially in Sub-Saharan Africa. A study conducted by Furusa, Sibanda and Mapenduka (2016) in Zimbabwe on the utilization of ICT resources by some schools established that some schools lacked adequate ICT facilities and infrastructure hence they could not fully integrate all the ICT system into all administrative functions such as examinations preparation, processing, documentation and reporting.

2.4.5 The Use of ICT for Communication with Teachers

The school administration can leverage on ICT to create social networks that it can act as a channel of communication with the teachers. The most common social media group network is the WhatsApp group for the teachers where official communication can be posted. This is the easiest form of communication as it reaches every member of the group all at once. However, the major shortcoming of this platform is that it needs all members to have 'smart' mobile phones and internet. The schools administration can create other WhatsApp groups for communication with parents and the non-teaching staff. A study was conducted by Mutisya (2017) in Kitui County on the extent of ICT integration in the management of public secondary schools established that some principals were using ICT enabled programmes such as emails and Short Message Service (SMS) to communicate with teachers, parents and even suppliers.

2.5 The Role of ICT in Administrative Records Management of Secondary Schools

Record keeping is a very important function of the school administration. Records should be kept safely for future use or when needed. Oyier, Odundo, and Lilian (2015) opine that it would be impossible to run an institution if records are not well kept. Therefore, the school principals need to have adequate, timely and accurate data of both the students and the staff. These records will range from school personnel personal data, students' enrolment and academic progress reports, parents' contacts and other management information such as the financial and inventory records Oyier et al, (2015).

Information Communication Technology can be very helpful in record keeping in school management of tasks in different areas such as operations, library, inventory, school community relationships and curriculum management. The use of ICT can be used to store large information in soft copy rather than the use of manual filing system which is fast becoming obsolete in the 21st century, though some schools are still using the manual system for records management. The school administrators should have the requisite ICT literacy levels to plan, prepare, share store and retrieve such materials with ease when the need arises.

2.5.1 Integration of ICT in Library Inventory Records

The use of ICT can be very instrumental in the management of the inventory in the school library. The school can employ a library inventory management system instead of managing the library inventory manually. According to Katitia et al., (2019), such a system will document all the books and other inventory by capturing their details such as the book number, the number of copies of that book, the person the book has been issued to, the date of issue and the expected date of the return of the book or any other

teaching resource. Such a system will help in preventing the theft, loss or misplacement or all school textbooks and other resources.

A study done by Memoh & Egbunu (2019) in Abuja, Nigeria on the utilization of ICT in the provision of library services found out that ICT had facilitated the issuance and receipt of textbooks with no cases of any lost textbooks. Further, ICT had ensured smooth and easier auditing of the library reading materials and resources. Another study conducted by Onyiye & Idorenyin (2020) on the principal's utilization of ICT resources in secondary schools in the Cross River State, Nigeria, established that ICT had improved the effectiveness and efficiency of library record keeping in schools that had an integrated system for the management of library books.

2.5.2 Integration of ICT in Fees Payment Records Management

School administrators rely on records for information for decision making, therefore, there should be an effective system of storing and retrieving records when needed because records keeping are an indispensable part of the school administration Peretomode (2016). The school administrators can utilize ICT to manage the records of school fees payment either through the bank or via mobile money platforms such as MPESA and Airtel Money. The school should have an integrated financial system that reports on real-time the amount of fees paid by a student and the areas owed to the school. The integrated financial management system should be able to give parents access to the fee statement of his or her child by creating a student account where all the financial statements of the student are posted.

2.5.3 Integration of ICT in Human Resource and Payroll Records Management

The utilization of ICT can be very instrumental in the maintenance of records of the human resource who work in the school. These are both the teaching and the non-teaching personnel. Information in the digital format is easier to store and retrieve than

physical files which occupy a lot of space. These staff records per employee will include the year of employment, age, sex, the job designation and responsibilities, medical history, leaves, remuneration packages, personal staff file which contains achievements, promotions or even disciplinary cases, arrival and departure time from work and any other school properties under the custody of the staff member. According to Mang'ando (2015), one of the challenges in administrative efficiency is the failure by some school principals to keep proper records of all the human resources working in the school. However, with ICT, information can be kept in secure digital format in computers and other web-based programmes such as Google for easier retrieval.

In a study conducted by Nwosu (2012) on the principals' record keeping in Tabara State in Nigeria established that the use of ICT in record keeping of the staff assisted the school principal in all the areas of human resource management and it was a sign of competence in management. The principals who had adopted the use of ICT tools and equipment such as the computers and mobile phone applications in keeping of the staff records scored highly on their management level competence unlike those who used the manual systems.

2.5.4 Integration of ICT in the Administration of Students' Data

Information Communication Technology can be used in the administration of the students' personal and non-academic data such as the student's admission number, class, age, gender, previous primary school attended, participation in co-curricular activities and any other responsibilities held in school. The integrated ICT system can also be used in areas such as fee processing and transactions and communication to parents about their fees status. According to Onyinye and Idorenyin (2020), schools can also have an online admission system that allows the institution to collect and store

data from prospective students and even parents. This system enhances the values of accountability, transparency and responsiveness because the school can respond to queries from parents and thus overcoming the distance and time constraints Marmar and Madhu (2013).Therefore the integration of ICT in record management brings about convenience to the school, parents and students. The Schools Management System should run on electronic platform so that information on the enrolment of learners is relayed to the Ministry of Education on a real time basis.

2.5.5 Integration of ICT in Stores Record Management

The use of ICT in record management can ensure accurate tracking of the receipt and dispensation of goods and stationery from the stores. According to Alazzam et al., (2012), the school administrators should incorporate technology in the management of all the stock so as to curb instances of misuse or theft of school property. The scholars further argue that the school principal should be creative and innovative enough in restructuring the management of the record of goods in stores in order to accommodate and utilize the efficiency of the modern technology.

According to Mue, (2014), ICT can be used to monitor the rate at which various items and facilities are being utilized in the school. Such items and facilities include text books, exercise books, office stationery, chairs, tables, sport equipment, food stuff, cleaning reagents and many more. Without proper monitoring, such items may run out of stock without the knowledge of the school administrators. A study by Mue (2014) in Lang'ata Constituency established that there were numerous challenges experienced by schools in incorporating ICT in the management of school facilities. Therefore, this study will examine how ICT integration can be used in stores record management in secondary schools from Makueni County, Nzaui Sub-County.

2.6 The Role of ICT Integration in Financial Management of Secondary Schools

Financial management is one of the performance indicators of any institution, schools included. Any operational or developmental decision in a school is based on the financial position of the school. Therefore reliable, accurate and timely information on the school's finances will be helpful in supporting management functions especially in decision making. Information Communication Technology can be used to support the genera1 financia1 operations of a school in areas such as budgeting, procurement, payment of school fees, general accounting and reporting, cash flows and payroll management.

According to Muema (2015), the integration of ICT in operations by schools in Kenya has been mostly in learner instruction and not financial management. Studies conducted by Katitia, Tanui, and Oruta, (2019 in Kajiado showed that only 25% public schools out of 61 sampled had integrated ICT in school financial management systems. The scholars add that integration of ICT helps prevent the school principals from misappropriating and embezzling school funds because it leads to transparency and traceability of all financial transactions.

2.6.1 The Integration of ICT in School Procurement

The integration of ICT in the procurement of school goods and services promotes the corporate values of participation, accountability and transparency by making the relevant data on tenders available online to vendors who wish to supply such goods and services to the school Mulinge, (2020). Most of the developed countries have implemented an integrated financial management system that integrates procurement functions for all public schools unlike most African which are still struggling to implement a financial management system. For example, the public schools in the United Kingdom and India are expected by law to publish all the school tenders on their

website. The tender bidding is done online and the results of the tender are also communicated online, Tondeur, Braak, & Valcke (2007).

However, in most schools in Africa, the procurement process in done manually. According to a study conducted by Ereyi, Okhion, Iyamu, (2018) in a select Nigerian public schools, it established that some schools controlled the finances manually in terms of payment of the suppliers and bills despite a government initiative of empowering the head teachers and principals to use ICT in all its financial operations including procurement. In schools that had embraced ICT in financial management, it was established that ICT improved the transparency of the procurement process even in terms of the payment of the venders (Ereyi et al., 2018).

2.6.2 The Integration of ICT in School Budgeting

The use of ICT in budgeting helps in the allocation of the school finances to various activities and programs and also curbs school administrators from misusing or misallocation of financial resources because of the increased accountability and traceability of the financial resources. According to Mue, (2014) ICT can help the school administrators to keep track of the expenditure against the budget set. Accordingly Olayinka (2020) avers that the use of ICT in school budgeting can help provide real time information to the important stakeholders such as the government on the amount of funds allocated to each school programme or activity. Further, the government can utilize the ICT platforms to approve such programmes/projects according to the set budget.

In a study on the utilization of ICT in the financial management of public secondary schools in Machakos County by Mulinge (2020), the findings indicated that most principals were not adequately knowledgeable and skilled on how to utilize ICT in the

school budgeting procedures and management of the school finances in general and that they relied heavily on the school bursars to estimate and formulate the school expenditure budgets. In the study, most day schools used a manual system of financial budgeting and reporting. This study intended to find out whether schools in Nzaui Sub-County, Makueni County have integrated ICT in their financial operations for budgeting.

2.6.3 The Integration of ICT in School Cash-flow Management

School financial administrators can use ICT in capturing, documenting and processing all financial transactions such as cash flows and audits carried out by the school for future reference. In the United Kingdom, all public schools are expected by policy to use prescribed accounting software packages when generating financial reports. The schools are also expected to use electronic banking which enables the schools to generate real-time income-expenditure financial reports. Furthermore, the ICT software installed in the School Management System automatically generated payrolls, fees statement reports and payment of the procured goods and services (Katitia, et. al, 2019).

2.6.4 The Integration of ICT in School Finance Accounting and Reporting

The utilization of the ICT can help in accounting purposes using accounting soft wares such as Quick Books and Sage which are installed in computers or the use of online systems known as E-accounting which enables the financial transactions to be captured, recognized and reported electronically. Studies conducted by Tondeur, Braak, & Valcke, (2007) in schools in New Zealand established that all public schools use a Schools Management System (SMS) for management, allocation of finances and accounting for the finances allocated to the school. The school administrators are expected to submit accurate student enrolment data and financial reports to the Ministry of Education.

The public schools in New Zealand are only allowed to run two bank accounts: the capital works account and the expenditures account. The funds in capital works account are used for major infrastructural and developmental projects while funds in the operational account are used for day to day running of the school including the payment of wages to non-teaching staff, payment of bills, utilities and the maintenance of school property. A study by Mue (2014) in Lang'ata Constituency on the utilization of ICT in financial accounting established that most of the school principals agreed that the schools have a financial accounting programme though they are only run by the school accountant and reports forwarded to the school principal. This study therefore, seeks to establish whether the schools in Nzaui Sub County have an integrated ICT financial management system for procurement, budgeting, cash flow management, and accounting and reporting.

2.7 Summary of the Literature Review

The literature reviewed has shown that ICT integration in school administrative functions can make these functions more effective and efficient especially in large and complex schools. The uptake of ICT by schools administration in the developed countries especially in Europe is almost 100% unlike in developing countries though the momentum has picked up in the last decade.

Literature has shown that ICT can be very helpful in the supervision of teachers by tracking their discharge of services both inside and outside classroom. The schools need to acquire the requisite infrastructure and resources such as computers, soft wares, TVs and internet for the integration of ICT in administration to take place. Most established and urban schools have the requisite ICT infrastructure unlike the schools in the remote areas or the small upcoming day schools.

Literature has also shown that the integration of ICT systems can be very helpful in the management of school records and finances through the corporate governance principles of accountability, transparency and participation.

2.8 Research Gaps to be filled by the Study

The application, integration and adoption of ICT enabled solutions to school administrative functions is an ever evolving and dynamic modern management approach. The usage of ICT in a school setting can vary from instructional, communication to administrative functions. The literature reviewed has shown the various ways of the application of ICT in school administrative activities. However, new areas of the utilization of ICT in school functions are emerging every now and then basing on the government's policy of adoption of digitization of the education sector. For example Baharuldin, Jamaluddin and Shaharom (2019) conducted a study in Malaysia on the relationship between teachers' ICT competence and the school administrative support. Another study by Qureshi (2016) in Pakistan on the efficient use of ICT in administration did not explore the various administrative functions that can be leveraged on ICT in educational institutions unlike this current study. Therefore, there are new areas of application of ICT in school administrative activities that are not captured in the literature review. This is the research gap that this study intends to fill.

Moreover, much of the literature reviewed is from other parts of the world and other regions of Kenya, but not much studies on this topic have been done in Nzaui Sub-County, Makueni County. For example, Bosu (2019) conducted a study in Ghana on the use of ICT in administrative activities in higher education institutions. This study did not include secondary schools. Locally, a study by Katitia, Tanui and Oruta (2019)

conducted a study in Kajiado County restricted itself to the use of ICT in staff management and not the broader aspects of administration, which this study intended to cover. Another study by Kiage (2023) carried out in Nairobi County focused more on the use of ICT in teaching and learning and less on administrative functions. Therefore, the findings of other regions cannot be assumed to hold for Nzaui Sub-County public secondary schools. This clearly shows that there is a gap in the area of the role of ICT in supporting administrative functions. Hence the need for this study.

CHAPTER THREE

RESEARCH METHODOLOGY

3.1 Introduction

This chapter covers the following areas: research design, location of the study area, target population, sample size and sampling techniques, data collection instruments, data analysis and presentation and lastly ethical and logistical considerations.

3.2 Research Design

A research design is defined by Pandey and Meenu (2015) as a framework or plan for a study that is used as a guide in collecting and analysing the data. This study adopted a descriptive study design. Kothari (2008) defines a descriptive design as study which is concerned with describing the characteristics of a particular individual or a group. Descriptive design describes a phenomenon in its existing current situation. This design allows the researcher to use various methods such as the questionnaires, observation and interviews to collect data Mugenda and Mugenda (2003). This design was appropriate because it allowed the researcher to collect data on the variables of the study and how they influence the school administration. Further, descriptive design allowed the researcher to collect opinions, perceptions and experiences from the school administrators and other stakeholders on the role of ICT in supporting school administrative functions.

3.3 Location of Study

This study was conducted in Nzaui Sub-County in Makueni County. Makueni County is in the former Eastern Province of Kenya and covers an area of 80,008 square kilometres with a population of 987, 653 people, according to the 2019 census. The county has six constituencies namely: Makueni, Mbooni, Kaiti, Kibwezi East, Kibwezi West and Kilome. Administratively, Makueni County has 8 sub-counties, with Nzaui

and Kathonzweni being the additional sub-counties on top of the constituencies. Nzaui Sub-County is located in the Kibwezi West Constituency. Nzaui Sub-County was picked because there has been inadequate research conducted in the area on the role of ICT in supporting administrative activities in secondary schools.

3.4 Target Population

Target population is the entire set of elements, objects or persons with similar observable characteristics from which the data will be collected (Creswell, 2009). According to the Nzaui Sub-County Education Office (2023), there are 56 public secondary schools in the area. The Extra County schools are three, County schools are seven while the Sub County schools are 46. All sub county and county schools have one deputy while the extra county schools have two deputies per school. This study targeted all the school principals, school deputies, deans of studies, secretaries, bursars, librarians and the ICT officers/teachers as the research respondents.

The school principals and the deputies are the government officially mandated administrators of schools. The other cadre of research respondents are the users and operators of the ICT facilities and systems in schools ranging from examinations management, inventory, finance and procurement to communication with other stakeholders. Therefore, the study targeted 56 principals, 59 deputy principals, 56 deans of studies, 56 ICT officers/ teachers, 56 bursars, 56 librarians and 56 secretaries. Also included in the target population was the Nzaui Sub-County Director of Education. The total target population for this study were 396 respondents.

3.5 Sample Size and Sampling Technique

A sample is a proportion of the target population selected for study and analysis but representing the entire population (Orodho, 2009). The study sampled 30% of the

target population in each stratum as recommended by Mugenda and Mugenda (2003) using stratified random sampling technique because the research respondents fall in different strata. The study sampled 30% of the schools in the sub-county using simple random sampling technique.

Random sampling technique was used so as to give every member of the stratum a fair and equal chance of being selected for the study. In total, 17 schools were selected. From each of the 17 schools, the study selected the following members as the respondents of the study: the principal, the deputy principal (for the one extra-county school selected, the two deputies were picked, making the number of deputies to be 18), the dean of studies, ICT officer/teacher, bursar, librarian, and the school secretary. In total, the study intended to sample 121 respondents as captured in table 3.1.

Table 3.1: Target population and sample size

Category of Respondents	**Target Population**	**Sampling Percentage**	**Sample Size**	**Sampling Technique**
Principals	56	30%	17	Random
Deputy Principals	59	30%	18	Random
Deans of Studies	56	30%	17	Random
ICT officers	56	30%	17	Random
Bursars	56	30%	17	Random
Librarians	56	30%	17	Random
Secretaries	56	30%	17	Random
SCDE	1	100%	1	Purposive
Total	**396**	**30%**	**121**	

3.6 Data Collection Instruments

3.6.1 The Questionnaire

This study used the questionnaire as the primary data collection instrument. The questionnaire was administered to the key respondents who are the principals, deputy principals, deans of studies, ICT officers, bursars, librarians and the secretaries. The questionnaire is the most preferred instrument because it can collect huge sample data within a short duration of time (Orodho, 2009). The questionnaire contained both open-ended and closed-ended question items. The questionnaire was in six sections, the first section contained questions items capturing the demographic information of the respondents while the remaining sections had question items measuring the indicators of the dependent and independent variables. The closed-ended questions were measured on a Likert scale of 5 grades.

3.6.2 The Interview Guide

The interview was conducted to the Sub-County Director of Education to assess the overall level of ICT integration in the Sub-County. The interview guide contained question areas that fall under the domain of the Sub-County Director of Education. Data collected here was used for triangulation with that from the questionnaires. The contents of the interview include questions on the government policy on ICT integration in financial management in schools, the level of ICT uptake by schools in the sub-county and the mode of communication between the Ministry of Education and schools.

3.6.3 The Observation Guide

An observation guide was used in the selected schools to check and corroborate the information given on the level of ICT integration in school administrative functions. The observation guide was used to confirm the availability or unavailability of the ICT facilities in the selected schools. Some of the ICT devices and facilities observed were

desktop computer/laptops, projectors, printers, computer laboratories, CCTV cameras, internet and television. The information form the observation schedule was used for triangulation of information from the questionnaires and the interviews.

3.7 Reliability and Validity of the Research Instruments

3.7.1 Validity of the Research Instruments

Validity of a research instrument is the extent of the accuracy and meaningfulness of the results obtained by a research instrument (Orodho, 2009). The results of an instrument are considered to be valid when the instrument accurately measures what it is supposed to. This study ensured that content validity of the research instruments is upheld by subjecting the instrument to a review by experts who in this case are the research supervisors. According to Best and Kahn (2011), subject experts can help identify the weaknesses of the instruments and advise on the appropriate amendments to the instrument so as the increase its validity.

3.7.2 Pilot Study

Pilot study was done by administering questionnaires to 21 respondents in three schools in neighbouring Makueni sub-county. This was conducted as a way to identify the likely deficiencies and difficulties that respondents could encounter during the actual data collection process. The pilot study helped in determining whether the research instruments are aligned with the objectives and study questions. Questions items which were misunderstood or had ambiguous answers were revised for clarity.

3.7.3 Reliability of the Research Instruments

Reliability of an instrument is the extent to which the instrument produces consistent and stable results after repeated trials (Kothari, 2014). This study used the test-retest method to test the reliability of the research instrument by administering the research

instrument to a sample of 14 respondents evenly drawn from each of the stratum over a time variation of 2 weeks. The results of the first and second test were correlated using the Cronbach's Alpha Coefficient Model. A coefficient value of at least 0.7 is considered acceptable and sufficient reliability test in social sciences (Cohen, Manion and Morrison, 2012. The Cronbach reliability test values range from 0.00 to 1.00. Values close to 1.00 show that the factors under investigation can be measured, (Cronbach, 1984). The Cronbach Alpha values for each objective are as shown in the table 3.2 below.

Table 3.2: Reliability Test Results

Reliability Statistics

Objective	Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	No. of Items	Interpretation
Objective 1	.983	.983	14	Excellent
Objective 2	.872	.872	14	Good
Objective 3	.896	.896	14	Good

The reliability test for the first objective (to determine the role of ICT integration in instructional supervision of secondary school teachers in Nzaui Sub-County) was 0.983 which is interpreted as 'Excellent'. The reliability value for the second objective (to investigate the role of ICT integration in administration records management in secondary schools in Nzaui Sub-County) was 0.872 which is interpreted as 'Good'. The Cronbach Alpha value for the third objective (to evaluate the role of ICT integration in financial management in secondary schools Nzaui-Sub County) was 0.896 which is interpreted as 'Good'. According to Nachmias and Nachmias, (2009) a positive coefficient of 0.70 is considered as reliable. However, Ghazali, (2008) asserts that a Cronbach alpha (1984) value of 0.60 is acceptable reliability test in the social sciences.

Therefore, the research instrument had a high reliability level in all the three objectives of the study.

3.7 Data Analysis and Presentation

This study collected both quantitative and qualitative data from the respondents. Quantitative data was generated from the bio data of the respondents and the Likert scale. This data was edited, coded and the entered into the SPSS Version 27 for data analysis. The data was analyzed statistically into percentages, frequencies, means, mode, standard deviation and correlation analysis. Qualitative data was collected from interviews and open-ended question items and was analysed through content analysis along thematic areas. The data was then presented in form of narrative summaries.

3.8 Ethical and Logistical Considerations

The researcher upheld a high level of professionalism and integrity when conducting the research study. The researcher ensured that the respondents provided information freely and voluntarily free from any intimidation or coercion. The researcher upheld anonymity, confidentiality and privacy of the respondents so that they did not undergo any threats, whether real or perceived. The researcher guaranteed the credibility and integrity of the results of the study by ensuring that the results are free from any form of manipulation or falsehood.

The researcher secured an introductory letter from the university permitting her to conduct the study. The researcher then applied for a research permit from the National Commission for Science, Technology and Innovation (NACOSTI). Finally, the researcher sought an authorization letter from the County Director of Education (Makueni County) allowing the researcher to conduct a study in the selected schools.

CHAPTER FOUR

DATA ANALYSIS, PRESENTATION AND DISCUSSION

4.1 Introduction

This chapter discusses and presents the results and findings of the study as captured in the data collection instruments. The purpose of this study was to investigate the role of ICT integration in supporting administrative activities in secondary schools in, Nzaui Sub-County, Makueni County, Kenya. The objectives of the study were to: determine the role of ICT integration in instructional supervision of secondary school teachers; investigate the role of ICT integration in administration records management in secondary schools; and evaluate the role of ICT integration in financial management in secondary schools in Nzaui Sub-County.

4.2 Response Rate

The research issued a total of 120 questionnaires based on the 7 categories of the respondents, out of the 120 questionnaires issued to respondents, 105 were duly filled and returned, giving a return rate of 87.5%. The questionnaire return rate is as shown in table 4.1.

Table 4.1: Questionnaire Return Rate

Category of the Respondents	Sample size	Questionnaires Returned	Percentage Return Rate (%)	Percentage of Return Rate (%)
Principals	17	14	82.4	13.3
Deputy Principals	18	15	83.3	14.3
Deans of Studies	17	13	76.5	12.4
ICT officers	17	16	94.1	15.2
Bursars	17	16	94.1	15.2
Librarians	17	14	82.4	13.3
Secretaries	17	17	100.0	16.2
Total	**120**	**105**	**87.5%**	**100.0%**

The results indicate that the response rate was 87.5% which is considered very good since it is above the 70% threshold recommended by Mugenda and Mugenda (2003). Majority of the respondents were the secretaries at 16.2% of the respondents; the ICT officers and bursars tied at 15.2% of the respondents while the deputy principals constituted 14.3% of the respondents. The principals and the librarians tied at 13.3% of the respondents while deans of studies formed the lowest sample category at 12.4% of the respondents. This good return rate was achieved because the researcher first established a good face-to-face rapport with the respondents and then collected the questionnaires immediately they had been filled.

4.3 Demographic Information of the Respondents

4.3.1 Gender of Respondents

The study sought to establish the gender of the respondents. The respondents were given two options of either male or female. The results are as shown in Figure 4.1.

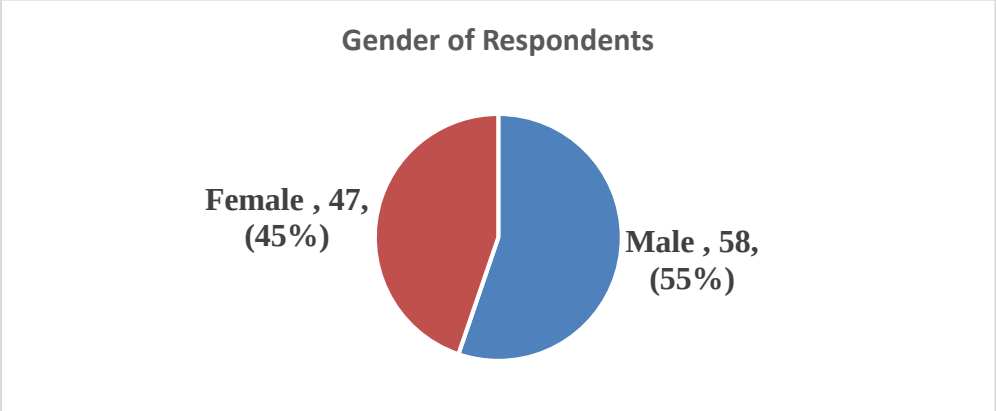

Figure 4.1: Gender of Respondents

The findings captured in Figure 4.1 indicates that the majority of respondents were male at 55% while females were at 45%. However, the genders disparity is not very wide, implying that there was a fairness in the selection of the respondents in terms of their gender. This may also imply that schools have instituted a gender balance in terms of staffing. The findings also imply that both male and female gender understand the role

of ICT integration in administrative functions in a school, however, the male gender has been engaged more than the female gender in matters of ICT in school administrative functions.

4.3.2 Years of Work Experience of Respondents at the Current Work Station

The research sought to establish the years of experience of the respondents in their respective current stations. The years of work experience has a bearing on respondent's credibility and competence in the response to the research item. Table 4.2 shows that results of the study.

Table 4. 2: Years of work experience of the respondents

Years of work experience	Frequency	Percentage
5 years and below	35	33.3
6-10 years	46	43.8
11-15 years	15	14.3
16-20years	04	3.8
Above 20 years	05	4.8
Total	**105**	**100.0**

In terms of the years of work experience at the current station, majority of the respondents 46 (43.8%) had work experience of between 6-10 years followed by 35 (33.3%) who had work experience of 5 years and below. There were 15 respondents (14.3%) who had worked at the current station for 11-15 years; while 04 (3.8%) of the respondents had 16-20 years of work experience. The category of respondents who had worked for above 20 years at the current station was 5 (4.8%). These findings are presented in Figure 4.2.

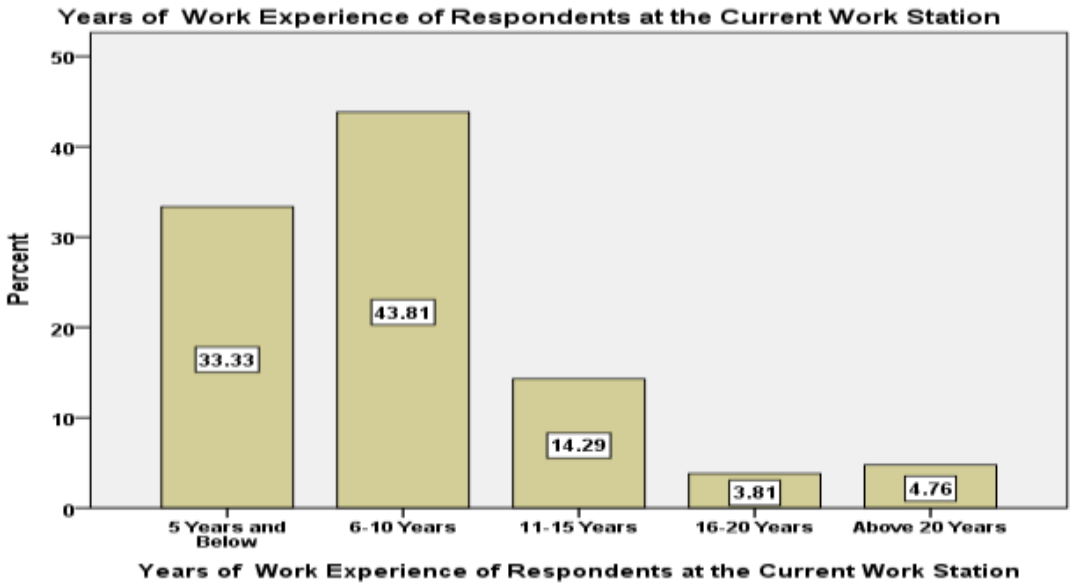

Figure 4.2: Years of work experience of the respondents at the current work station

These findings infer that all the respondents had adequate experience to provide credible information on the subject of study. The findings further indicate that majority of the respondents whose schools have embraced ICT in their administrative functions have worked at the work stations for 10 years and below. This infers that employees who have fewer with fewer years of experience at their work stations tend to embrace more the use of ICT in their administrative roles than staff who have stayed for much longer periods of time in a given school.

4.3.3 Category of the Schools

The respondents were asked to state the category of the school they work in. They were given three options to choose from: extra-county school, county school and sub-county school. The results of the survey are captured in table 4.3.

Table 4.3: Category of schools

Category of school	Frequency	Percentage
Extra-County school	7	6.7
County School	18	17.1
Sub-County School	80	76.2
Total	**105**	**100.0**

The findings clearly indicate that majority of schools in Nzau Sub-County are sub-county schools at 76.2% followed by county schools at 17.1% and lastly extra-county schools at 6.7%. All sub-county schools are mixed day-secondary, all extra-county schools are single sex boarding schools while county schools can both be day mixed or single sex boarding schools. This information is important in order to map out which category of schools have or do not have the requisite ICT facilities and infrastructure to support administrative functions. This will help the stakeholders in the education sector to devise ways of equipping schools without or with inadequate ICT facilities and infrastructure.

4.4. The Role of ICT Integration in Instructional Supervision of Teachers

The first objective of this study sought to determine the role of ICT integration in instructional supervision of secondary school teachers in Nzaui Sub-County. This entails the use of ICT to capture data on teacher's arrival and departure time, lesson attendance, attendance to other responsibilities assigned, exam preparation and administration, preparation and submission of professional documents using the ICT and managing of students' academic progress. In order to assess the role of ICT in instructional supervision of teachers, the respondents were given statements related to the variable against which they were to rate their level of agreement or disagreement on a Likert scale of 5 grades as follows: Strongly disagree (SD); Disagree (D); Neutral (N); Agree (A); Strongly Agree (SA). The import of these statements was to capture

the respondents' views on a wide range of issues related to ICT and how it is used to supervise teachers in schools. The results of the study are as shown in Table 4.4 below.

Table 4.4: Role of ICT instructional supervision of teachers

Statement	SD=1	D=2	N=3	A=4	SA=5	N	Mean	St. Dev
Our school uses time attendance software to monitor teachers' arrival and departure time	10 (9.5%)	30 (28.6%)	05 (4.8%)	45 (42.9%	15 (14.3%)	105	3.24	1.275
Our school uses ICT to supervise teachers' class attendance	30 (28.3%)	43 (41.0%)	07 (6.7%)	18 (17.1%)	07 (6.7%)	105	2.32	1.244
The school administrators use social network platforms for communication with the teachers	00	10 (9.5%)	07 (6.7%)	61 (58.1%)	27 (25.7%)	105	4.00	0.844
Teachers use ICT to prepare their schemes of work	14 (14.4%)	12 (11.4%)	20 (19.0%	40 (38.1%)	18 (17.1%)	105	3.32	1.290
Teachers use ICT to prepare their lesson plans	47 (44.8%)	42 (40.0%)	5 (4.8%)	6 (5.7%)	5 (4.8%)	105	1.86	1.069
Teachers use ICT to prepare records of work	50 (47.6%)	43 (41.0%)	4 (3.8%)	6 (5.7%)	2 (1.9%)	105	1.73	0.923
Teachers submit their professional documents such as schemes of work and lesson plans online	35 (33.3%)	40 (38.1%)	10 (9.5%)	15 (14.3%)	5 (4.8%)	105	2.19	1.186
Our school uses ICT in timetabling	10 (9.5%)	12 (11.4%)	8 (7.6%)	40 (38.1%)	35 (33.3%)	105	3.74	1.294
Our school uses ICT in exam preparations and administration	15 (14.3%)	18 (17.1%)	7 (6.7%)	37 (35.2%)	28 (26.7%)	105	3.43	1.413
Our school uses ICT for administration of students' academic data	12 (11.4%)	15 (14.3%)	13 (12.4%)	38 (36.2%)	27 (25.7%)	105	3.50	1.324

4.4.1 Use of ICT to Monitor Teachers' Arrival and Departure Time

The study sought to establish whether schools have installed ICT programme that monitors the teachers' arrival and departure time to and from school. The distribution of the responses in table 6 show that 9.5% of the respondents strongly disagreed with the question while 28.6% disagreed. The respondents who were neutral were 4.8% while those who agreed with the question were 42.9%. Those respondents who strongly agreed with the question were 14.3%. This question scored a mean of 3.24 (Std Dev =

1.275) on a scale of 1-5, while the mode response was 4 which had been coded 'agree' on the Likert Scale.

These findings imply that majority of the schools use time attendance software to monitor teachers' arrival and departure time in school. The time attendance software helps the school principal to monitor cases of teacher late arrival to school and early departure from school before the official working hours. Further, the software helps to detect cases of teacher absenteeism from school without due permission by the principal. These findings agree with Mulinge (2020) who observed that data collected by ICT on the arrival and departure time of teachers can be very helpful to the school administration when appraising the teachers.

4.4.2 Use of ICT in Supervising Teachers' Class Attendance

The study examined whether schools use ICT in supervising the teachers' class lesson attendance. The results from the Likert Scale are shown in Table 4.5.

Table 4.5: Use of ICT in supervising teachers' class attendance

Responses	Frequency	Percent
Strongly Disagree	30	28.6
Disagree	43	41.0
Neutral	7	6.7
Agree	18	17.1
Strongly Agree	7	6.7
Total	**105**	**100.0**

The findings show that 28.6% of the respondents strongly disagreed with the question; 41.0% disagreed; 6.7% were neutral implying were not sure about this question; 17.1% agreed while 6.7% strongly agreed. The mean score for this question on a Likert scale of 5 grades was 2.32 (Std Dev = 1.244) while the mode was 2 which translates into 'disagree' on the Likert Scale. The value of the standard deviation implies that the

responses scores were spread more around the mean. Generally, 69.3% of the respondents disagreed with this question and only 23.8% agreed. This results show that many of the schools in Nzaui sub-county do not use ICT to supervise teachers' class attendance. These are majorly sub-county day schools though a number of schools especially those in the extra-county and county categories have installed ICT systems in classrooms and offices for monitoring the teachers' class attendance. Therefore, there is need for all schools to install these ICT systems in classrooms and other strategic places and offices. Through the use of ICT data, the school administration will have information on the productivity levels of teachers. Such data as observed by Shah (2014) helps the school administrators in making quality decisions about the wok performance of the staff and take appropriate remedial actions if need be.

4.4.3 The use of the Social Network Platforms for Communication with Teachers

The study asked the respondents whether the school administration uses the social network platforms to communicate with the teachers. The responses were as follows: 25.7% of the respondents strongly agreed with the question; 58.1% agreed; 6.7% were neutral while 9.5% of the respondents disagreed. None of the respondents strongly disagreed with the statement. The mean score was 4.0 (std. dev = 0.844). Generally, 83.8% of the respondents agreed with this statement indicating that almost all the schools have social media platforms where they communicate with staff, both teaching and non-teaching. The most common social media platform for all the staff is the WhatsApp which brings together all the staff of a school.

4.4.4 The Use ICT in Preparation of Schemes of Work

The study asked the respondents on whether schools use ICT in the preparation of schemes of work. The responses are as shown in table 4.6.

Table 4.6: The use ICT in preparation of schemes of work

Responses	Frequency	Percent
Strongly Disagree	15	14.3
Disagree	12	11.4
Neutral	20	19.0
Agree	40	38.1
Strongly Agree	18	17.1
Total	**105**	**100.0**

The findings of the study show that on the question as to whether teachers use ICT to prepare their schemes of work are as follows: 14.4% of the respondents strongly disagreed; 11.4% disagreed; 19.0% were neutral; 38.1% agreed while 17.1% strongly agreed. The mean of the responses was 3.32 (Std dev = 1.290) while the mode was 4 coded as 'agree'. The results imply that a majority of teachers use ICT tools in the preparation of the schemes of work. The findings further showed that most of the schools have a prepared template in soft copy of the schemes of work which teachers adopt when preparing the schemes of work. These findings are supported by Muhammad (2014) who opined that teachers who adopt ICT are able to prepare and submit these documents to their supervisors with ease regardless of their location.

4.4.5 The Use ICT in Preparation of Lesson Plans

The study further asked the respondents to state whether the teachers use ICT to prepare their lesson plans. The responses were as follows: 44.8% of the respondents strongly disagreed; 40.0% disagreed; 4.8% were neutral, 5.7% agreed while 4.8% strongly agreed with the question. The mean of the question was 1.86 (Std dev = 1.069) while the mode was 1 which had been coded as 'Strongly Disagree'. Generally, 84.8% of the respondents stated that teachers do not use ICT to prepare lesson plans. This in essence shows that teachers have not fully embraced ICT in lesson planning, instead they use manual methods of writing the lesson plan on a pre-prepared school forms.

4.4.6 The Use of ICT to Prepare Records of Work

This question enquired from respondents whether teachers use ICT to prepare their records of work. The findings were as follows: 47.6% of the respondents strongly disagreed with the question; 41.0% disagreed; 3.8% were neutral; 5.7% agreed while 1.9% strongly agreed. The mean score was 2.19 (Std dev=2.19) while the mode was 1 coded as 'strongly disagree'. On the overall, 88.6% of the respondents stated that teachers do not use ICT to prepare the records of work. This implies that most of the schools in the sub-county still use manual methods of preparing and keeping records of work. Teachers should be encouraged to use prepare records of work using the ICT tools such as computers. However, this can only be realized if the school has adequate computers for the teachers to use.

4.4 7 The Use of ICT for Teacher Submission of Professional Documents Online

This question asked the respondents to state whether teachers submit their professional documents such as the schemes of work and lesson plans online. The findings are shown in Table 4.7.

Table 4.7: Whether teachers submit their professional documents online

Responses	Frequency	Percent
Strongly Disagree	35	33.3
Disagree	40	38.1
Neutral	10	9.5
Agree	15	14.3
Strongly Agree	5	4.8
Total	**105**	**100.0**

The responses were as follows: 33.3% strongly disagreed with the question; 38.1% disagreed; 9.5% were neutral; 14.3% agreed while 4.8% of the respondents strongly agreed. The mean of the responses was 2.19 (Std dev = 1.186) while the mode was 2 which had been coded as 'disagree'. Generally, 71.4% of the respondents disagreed

with this question. This implies that majority of the teachers in secondary schools especially day schools do not submit their professional documents online. This can be attributed to the fact that schools have not fully integrated their ICT facilities for online submission and approval of professional documents

4.4 8 The Use of ICT in Timetabling

The study examined the question on whether schools use ICT in timetabling. The findings of the study were as follows:: 9.5% of the respondents strongly disagreed with the question; 11.4% disagreed; 7.7% were neutral (not sure); 38.1% of the respondents agreed while 33.3% strongly agreed. The mean score was 3.74 (Std dev= 1.294) while the mode was 4 (agree). The findings generally show that majority of schools in Nzaui Sub-county have adopted and integrated ICT in lesson time tabling. The integration of ICT in timetabling replaces the manual system of timetabling which is very tedious and time consuming unlike the ICT enabled method.

4.4.9 The Use ICT in Examination Preparation and Administration

The study further sought to find out whether schools in the sub-county use ICT in exam preparations and administration. The findings from the responses were as follows: 14.3% strongly disagreed with the question; 17.1% disagreed; 6.7% were neutral; 35.2% of the respondents agreed while 26.7% strongly agreed. The mean score was 3.43 (Std dev= 1.413) while the mode was 4 (agree). These findings imply that most of the schools in the sub-county have integrated ICT in exam preparation and administration. This means that internal examinations are prepared using computers and printed within the school. It also implies that in some schools the examination analysis is done by a computer aided programme.

4.4.10 The Use of ICT for Administration of Students' Academic Data

The last question aimed at collecting data on whether schools in Nzaui Sub-County use ICT for administration of students' academic data. The findings are captured in Table 4.8.

Table 4.8: Whether schools use of ICT for administration of students' academic data

Responses	Frequency	Percent
Strongly Disagree	12	11.4
Disagree	15	14.3
Neutral	13	12.4
Agree	38	36.2
Strongly Agree	27	25.7
Total	**105**	**100.0**

The findings from the study were as follows: 11.4% of the respondents strongly disagreed with the question; 14.3% disagreed; 12.4% were neutral (unsure); 36.2% of the respondents agreed with the question while 25.7% strongly agreed. The mean was 3.50 (Std dev=1.324) with the mode of 4 (agree). Generally, 61.9% of the respondents stated that their schools use ICT in the administration of students' academic data. This findings show that most schools in Nzaui Sub-County have adopted ICT in the operations of administrative academic functions such as exam administration and timetabling, unlike the teachers who have not fully embraced ICT in the academic functions especially in the preparation of some academic documents such as the lesson plan and the records of work.

4.4.11: Transcription of the Interview with the Sub-County Director of Education

In the interview with the SCDE of Nzaui, as concerning the instructional supervision of teachers, this was her statement:

"All school principals are expected by policy regulation of the Ministry of Education and the Teachers Service Commission to monitor the arrival and departure of teachers from schools and attendance of classes. This information is required for career appraisal of teachers and to ensure that teachers do not miss lessons without due permission. Therefore, all schools have been advised to install a monitoring system that uses security biometrics and security cameras. Most schools have embraced and integrated ICT in their operational administrative functions especially the county and extra-county schools''

On the question of how the Ministry of Education's communicates with the school principals, this was the statement of the SCDE:

The ministry makes official communication through use of circulars that are cascaded downwards from the ministry headquarters, to the County Director of Education, then to my office of the Sub-county Director of Education. However, we have formed a WhatsApp group with the school principals where I normally forward any communication that is urgent. I am in constant communication with the school principals on any administrative and policy matters regarding the schools.

This statement by the SCDE clearly shows that there is a communication mechanism, both formal and informal from the ministry of education to the principals on the policy matters relating to the management of schools.

4.4.12: Information Collected using the Observation Check list

A spot check by the researcher using a check list confirmed that majority of the schools had installed an integrated ICT system that monitored the arrival and departure of

teachers from school, though some schools still used the manual system using a clock-in and clock-out book under the care of the school deputy principal or the secretary. Further, all schools within the sub-county had the following ICT tools and devices installed and operational by the administrative staff: desktop computer/laptop, mobile phone, photocopier and printer. Majority of the schools especially those in the county and extra-county category also had internet connection, projector, T.V, radio, video player, CCTV, digital camera, computer lab and program management soft wares for timetabling and exam analysis. None of the schools in the entire sub-county had an interactive whiteboard.

4.4.12 The Extent to which ICT Integration Influences Instructional Supervision of Teachers

The study went further to establish the extent to which the integration of ICT influences the instructional supervision of teachers. The respondents were given a Likert scale of 5 grades as follows: 1-very low extent; 2- low extent; 3- moderate extent; 4- great extent; 5-very great extent. The results of the study are captured in Table 4.9 and presented in Figure 4.3.

Table 4.9: The extent to which ICT influences instructional supervision of teachers

Responses	Frequency	Percent
Very low extent	5	4.8
Low extent	10	9.5
Moderate extent	30	28.6
Great extent	45	42.9
Very great extent	15	14.3
Total	**105**	**100.0**

The findings indicate that majority of the respondents (42.9%) were of the opinion that ICT integration influences the instructional supervision of teachers to a great extent while 14.3% said it was to a very great extent. The respondents who felt that the variable

influenced instructional supervision of teachers to a moderate extent were 28.6%; while 9.5% stated it was to a low extent; 4.8% of the total respondents were of the opinion that it influenced to a very low extent. The mean score of the responses was 3.52 with a standard deviation of 1.010. The mode of the responses was 4 (a great extent according to the Likert scale). The findings generally show that ICT integration influence instructional supervision of teachers to a great extent. These findings are presented in Figure 4.3.

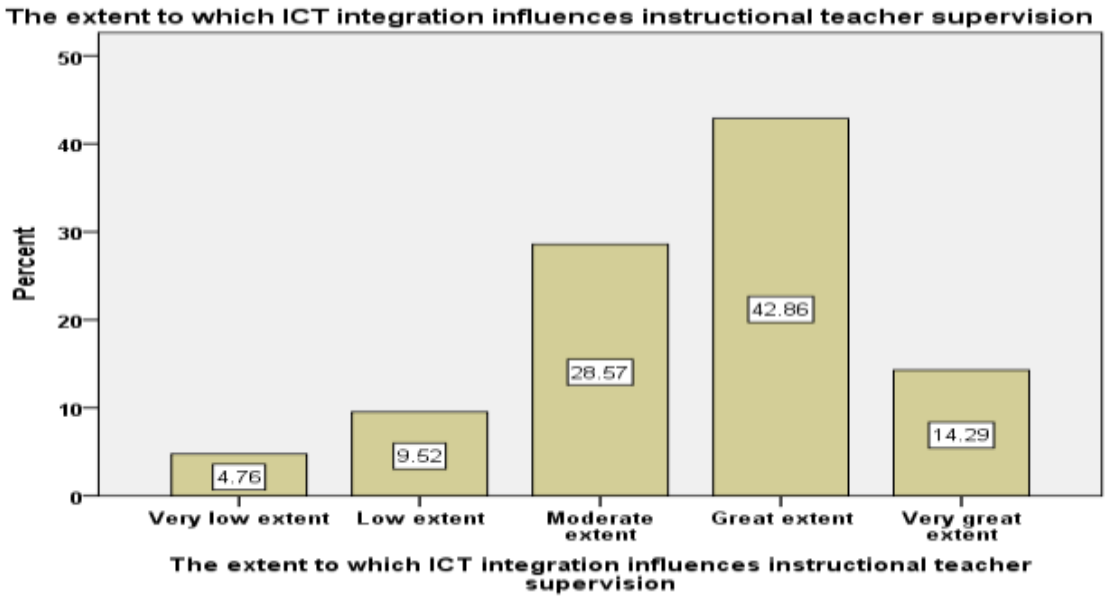

Figure 4.3: The extent to which ICT integration influences instructional teacher supervision.

The findings of this study agree with the study carried out by Abdul & Zohora (2012) in Malaysia which established that ICT was very instrumental in instructional and personnel management especially in very big schools. The school principals were the main respondents in this study. According to Katitia, Tanui, & Oruta, (2019), ICT can be used to monitor the performance of staff in their discharge of duties. Through the use of ICT, teachers can submit professional documents to their supervisors with ease regardless of their location. Through an interactive internal network platform, the supervisor or the school administration is able to assess the quality of the documents

submitted and give a feedback based on the expected standards of assessment. Through the same platform, the school administrators can communicate important information to the teachers (Onyekachi & Mohammed, 2021).

4.4.13 Correlation between Integration of ICT in Instructional Supervision and Supporting School Administrative Activities

The study computed a Pearson's correlation analysis between the independent variable (instructional supervision of teachers and the dependent variable (ICT integration in supporting school administrative activities in secondary schools). The value for the Pearson's correlation moment analysis for instructional supervision of teachers was 0.983 implying that there is a very strong positive relationship between ICT and the support of school administrative activities. This implies that schools which adopt the integration of ICT in the instructional supervision of teachers will have improved effectiveness and efficiency in the running of the administrative functions unlike those which do not. Principals are therefore encouraged to integrate ICT in their operations if they want to improve their supervision of teachers in terms of curriculum delivery.

4.5 The Role of ICT Integration in Administration Records Management in Secondary Schools

4.5.1 The Role of ICT Integration in Administrative Records Management

The second objective investigated the role of ICT integration in administration records management in secondary schools in Nzaui Sub-County. These records will range from school personnel personal data, students' enrolment and academic progress reports, parents' contacts and other management information such as the financial, library and inventory records Oyier et al, (2015). In order to assess this objective, the respondents were given a number of questions related to the objective of integration of ICT in administration records management. The responses were scored on a Likert scale of

five grades as follows: Strongly disagree (SD); Disagree (D); Neutral (N); Agree (A); Strongly Agree (SA). Table 4.10 shows the descriptive statistics summaries of the results.

Table 4.10: The Role of ICT in Administrative Records Management

Statement	SD-1	D=2	N=3	A=4	SA=5	N	Mean	St. Dev
ICT makes record keeping more efficient	0 (0. %)	0 (0%)	7 (6.7%)	46 (43.8%)	52 (49.5%)	105	4.43	0.618
Our school uses ICT in capturing personal data of staff and for payroll records	15 (14.3%)	25 (23.8%	13 (12.4%)	39 (37.1%)	13 (12.4%)	105	3.10	1.297
Our school uses ICT for library services	17 (16.2%)	63 (60.0%)	15 (14.3%)	8 (7.6%)	2 (1.9%)	105	2.19	0.867
Our school uses ICT for administration of students' personal and non-academic data	5 (4.8%)	37 (35.2)	7 (6.7%)	36 (34.3%)	20 (19.0%)	105	3.28	1.260
Our school has an ICT system for communication to parents and staff	2 (1.9%)	7 (6.7%)	10 (9.5%)	59 (56.2%)	27 (25.7%)	105	3.97	0.893
Our school has an ICT system for inventory management	16 (15.2%)	50 (47.6%)	16 (15.2%)	20 (19.0)	03 (2.9%)	105	2.47	1.057
ICT integration has led to reduction of theft cases of the school text books and other stationery	13 (12.4)	39 (37.1)	17 (16.2)	32 (30.5%)	04 (3.8%)	105	2.76	1.131

The first question asked the respondents to state whether they believed that ICT makes record keeping more efficient. The responses ranged from strongly disagree to strongly agree. Figure 7 presents the findings of the responses.

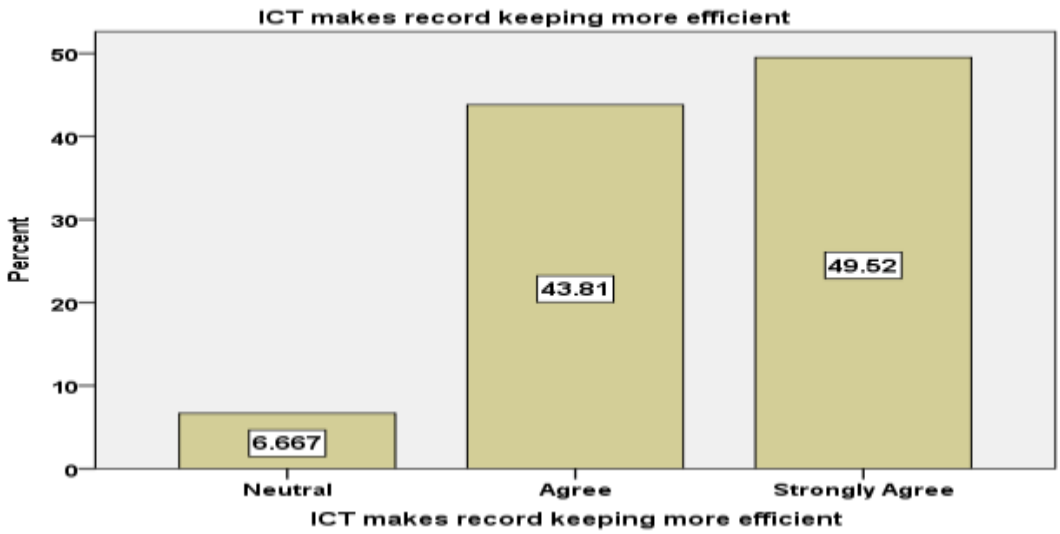

Figure 4.4: Whether ICT makes record keeping more efficient

The findings indicate that none of the respondents strongly disagreed nor disagreed with the question; 6.7% were neutral implying they were not sure; 43.8% agreed while 49.5% strongly agreed. Descriptive statistics computed produced a mean of 4.43 (Std Dev. 0.618) while the mode of the data was 5 which had been coded 'strongly agree'. Generally, 93.3% of the respondents were in agreement with the question that ICT makes record keeping more efficient in secondary schools. Records kept in the electronic format are easy to retrieve and process, occupies less space and are permanent in nature.

4.5.2 The Use of ICT in Human Resource and Payroll Records

The second question interrogated whether schools use ICT in capturing personal data of staff and for payroll records. The respondents were expected to state the level to which an ICT system has been applied in their respective schools. The results of the question shows that 14.3% of the respondents strongly disagreed with the question; 23.8% disagreed; 13% were neutral; 37.1% were in agreement with the question while 12.4% of the respondents strongly agreed. The mean score of the question was 3.10 (Std. Dev. 1.297). The mode of the responses was 4 which is coded as 'agree'. The majority of the respondents agreed with that statement thus we can infer that nearly half

of the schools have integrated ICT in record management of the staff personal data including payroll records

4.5.3 The Use of ICT for Library Services

The third question asked the respondents to state whether their school uses ICT for library services. Library services implies the use of ICT enabled system in the issuance and receiving of text books from students and staff. It also implies the storage of this data in an electronic format. The findings of the study were distributed as follows: 16.2% of the respondents strongly disagreed; 60.0% disagreed; 14.3% were neutral; 7.6% agreed while 1.9% strongly agreed. The mean score was 2.19 (Std dev. 0.867) while the mode was 2 which implies that many of the schools especially day schools do not use ICT for library services.

Generally, 76.2% of the respondents were in disagreement with the question which in essence shows that most of the schools run library services manually in terms of record keeping of books issuance and receipts. Most schools use book card for borrowing and returning of library books. This can lead to loss of text books in case of the loss or mishandling of the book cards. These findings agree with a study by Katitia et al., (2019) who observed that schools should employ a library inventory management system instead of managing the library inventory manually. Such a system will help in preventing the theft, loss or misplacement or school textbooks and other library resources.

4.5.4 Use of ICT in the Administration of Students' Data

The fourth question investigated whether schools use ICT for administration of students' personal and non-academic data. Such data include the student's admission number, class, age, gender, birth certificate number, previous primary school attended,

year of admission to the current school, membership of any club, games or sport and any other responsibilities assigned or held in school. Table 4.11 captures the findings.

Table 4.11: Whether schools use ICT in the administration of students' data

Responses	Frequency	Percent
Strongly disagree	5	4.8
Disagree	37	35.2
Neutral	7	6.7
Agree	36	34.3
Strongly Agree	20	19.0
Total	**105**	**100.0**

From the data analysed, 4.8% of the respondents strongly disagreed with the question that their schools use ICT in the administration of students' data; 35.2% disagreed; 6.7% were neutral; 34.3% agreed while 19.0% of the respondents strongly agreed with the question. The mean was 3.28 (Std Dev. 1.260) and the mode was 2 which had been coded as 'disagree'. Generally, those respondents who were in disagreement with the question were 40.0% while those who were in agreement with the question were 53.3%. From the findings, we can infer that schools that have adopted the use of ICT in the administration of students' personal and non-academic data are slightly more than a half while the rest use manual methods to manage students' personal and non-academic data.

4.5.5 Use of ICT for Communication with Parents

The fifth question asked the respondents to state whether their school has an ICT system for communication to parents. This includes the use of the bulk short message services (SMS) or social media group for parents such as WhatsApp. The responses were distributed as follows: 1.9% of the respondents strongly disagreed; 6.7% disagreed; 9.5% were neutral; 56.2% agreed while 25.7% of the respondents strongly agreed with the question. The mean was 3.97 (Std Dev. 0.893) and the mode was 4 which implied

that majority of the respondents agreed with the question. This therefore means that most of the secondary schools in Nzaui Sub-County use ICT to communicate to parents. This can be inform of bulk SMS platform or social media networks such as WhatsApp for the parents. The study found out that in some schools, each class has a WhatsApp group where the school is able to communicate with parents through the specific class teachers. Through this forum, parents are informed of any important events happening in school including the opening, closing and visiting days.

4.5.6 Use of ICT for Inventory Management

The sixth question sought to establish the opinions of the respondents on the matter of whether the school has an ICT system for inventory management. Inventory refers to a record of all the goods acquired by the school or being utilized or consumed. They include text books, exercise, teaching aids and resources, books, office stationery, chairs, tables, sport equipment, food stuff, cleaning reagents and many more. The findings of this question are captured in Table 4.12

Table 4.12: Use of ICT for Inventory Management

Responses	Frequency	Percent
Strongly Disagree	16	15.2
Disagree	50	47.6
Neutral	16	15.2
Agree	20	19.0
Strongly Agree	3	2.9
Total	**105**	**100.0**

The responses were as follows: 15.2% of the respondents strongly disagreed with the question; 47.6% disagreed; 15.2% were neutral; 19.0% agreed while 2.9% of the respondents strongly agreed with the question. The mean computation was 2.47 (Std Dev = 1.057) while the mode was 2 implying that majority of the respondents disagreed with the question. It therefore infers that most secondary schools especially the sub-

county schools do not have functional inventory management systems. Most schools use the manual methods to carry out school inventory program. The findings of this study concurs with the findings of the study conducted by Mue (2014) in Lang'ata Constituency that established that many schools in the constituency had challenges in incorporating ICT in the school inventory management. Alazzam et al. (2012) advises the administrators to incorporate ICT in the management of all the school inventory so as to curb instances of misuse or theft of school property.

4.5.7 Role of ICT in Curbing Loss of School Inventory

The last question asked the respondents to state whether ICT integration can lead to reduction of theft cases or loss of the school text books and other stationery. The findings are presented in Figure 4.5 as shown below.

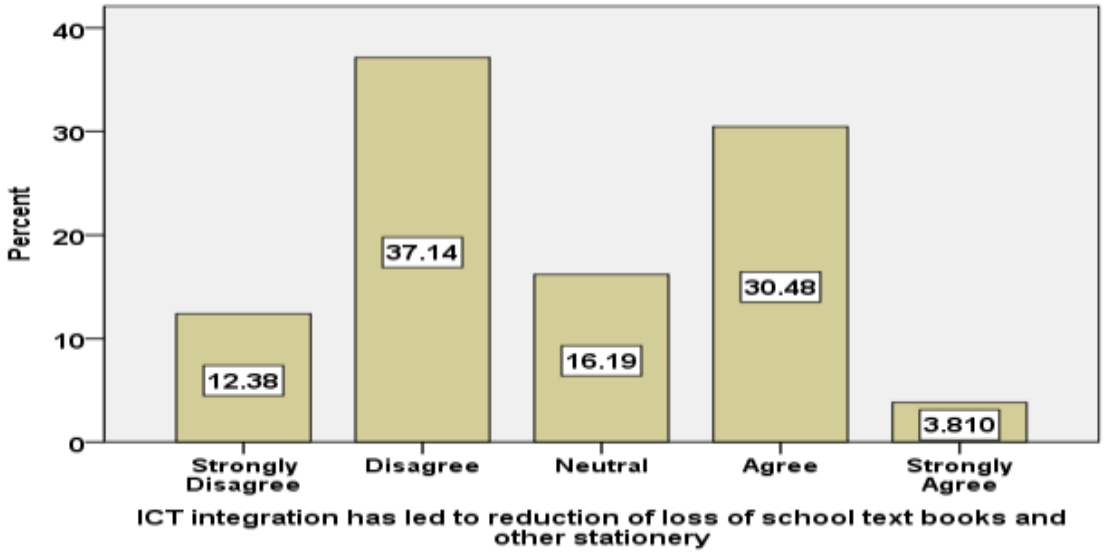

Figure 4.5: Role of ICT in curbing loss of school inventory

The responses as shown in figure 4.5 are as follows: 12.4% of the respondents strongly disagreed; 37.1% disagreed; 16.2% were neutral; 30.5% agreed while 3.8% strongly agreed. The mean of the scores was 2.76 (Std Dev = 1.131) while the mode was 2 which implied that most respondents disagreed with the question. However, the 33.8% of the

respondents who either agreed or strongly agreed stated that the installation of CCTV in the library and in the stores can help curb cases of theft of school text books and other stationery either by students or the staff. However, schools are encouraged to install an ICT system for inventory management in order to track real time the utilization of the consumables within the school. These consumables include food stuff and office stationery such as printing papers and exercise books. Mue (2014) advises that such a system will ensure that such items do not run out of stock without the knowledge of the school administrators or are not overstocked.

4.5.8 The Extent to which ICT Integration Influences Records Management in Secondary Schools

The study further to investigate the extent to which ICT integration influences records management in secondary schools in Nzaui Sub-county. Administrative records encompasses records about students, staff, suppliers, inventory, school property and form the government and the Teachers Service Commission. The respondents were asked to rate on a Likert Scale graded as follows: 1-very low extent; 2-low extent; 3-moderate extent; 4-large extent; 5-very large extent. The results of the data analysis are captured in Figure 4.6 below.

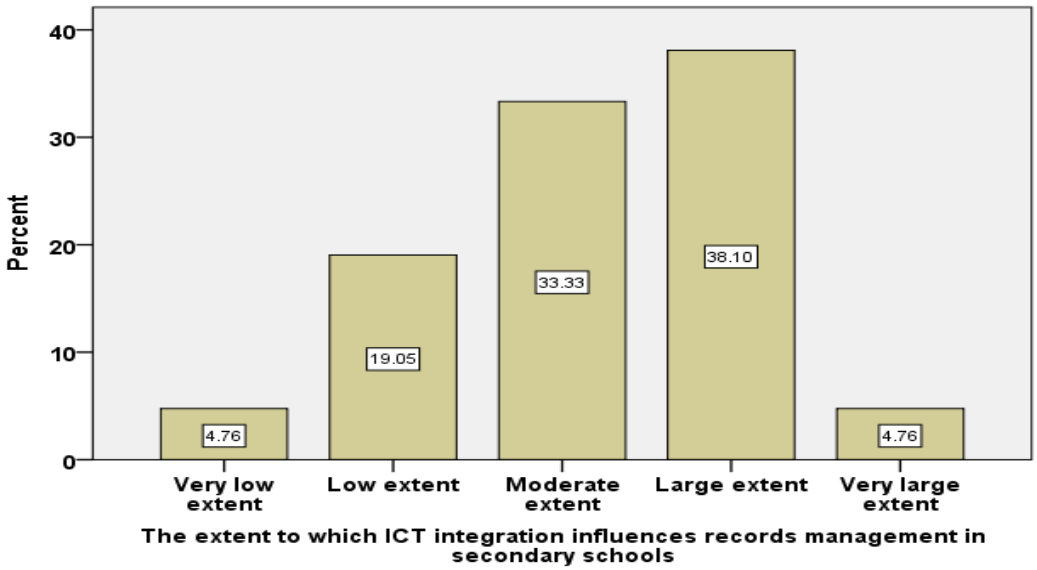

Figure 4.6: The extent to which ICT integration influences records management in secondary schools

The findings in figure 4.6 indicate that 4.8% of the respondents stated that ICT integration influences record management in secondary schools to very low extent; 19.0% stated it influenced to low extent while 33.3% were of the opinion that it influenced to a moderate extent. Those respondents who believed it influenced to a large extent were 38.1% while 4.8% stated that ICT influenced records management to a very large extent. Descriptive statistics computed produced a mean score of 3.19 (Std Dev = 0.962) and a mode of 4, implying that majority of the respondents stated that ICT integration influences records management to a large extent.

The findings presented in figure 4.6 indicate that integration of ICT can be very useful in records management with the majority of the respondents stating that it influenced to either a moderate or large extent. These findings agree with a study by Katitia et al, (2019) who found out that ICT can be deployed in library inventory management system instead of managing the library inventory manually. Records management also entails keeping updated records of both students and staff. Oyier et al, (2015) opine

that the school principal needs to have adequate, timely and accurate data of both the students and the staff. The use of ICT can be very utilitarian in ensuring that accurate and updated records are safely kept in school for easy retrieval and for audit by the government auditors.

4.5.9 Transcription of the Interview with the SCDE

The researcher conducted an interview with the SCDE on the matter of ICT integration and records managements in schools in the sub-county and these were her remarks:

> *"All schools within the sub-county have been encouraged to integrate ICT in management of data of both staff and students. The data on students is used by the Ministry of Education for capitation of schools. Data on data teachers is used by TSC for deployment and professional growth. It is therefore imperative that all schools have an integrated ICT system for record management."*

An observation by the researcher established the presence of a database for the students in most schools and that most schools were able to communicate to parents through the bulk short message service (SMS) system. However, many schools did not have an integrated ICT enabled inventory or library management system.

4.5.10 Correlation between ICT Integration in Record Management and Supporting School Administrative Activities in Secondary Schools

The study computed a Pearson's correlation analysis between the independent variable (Administrative records management) and the dependent variable (supporting school administrative activities in secondary schools). The value for the Pearson's correlation moment analysis index for ICT integration in records management and the support in running school administrative activities was 0.871 implying that there is a very strong positive relationship between ICT integration in records management and the support

of school administrative activities. This correlation results imply that schools that integrate ICT in records management will have increased efficiency in the operations of the administrative functions. Therefore, secondary schools principals are encouraged to integrate ICT in records management for better or improved outcomes in records management.

4.6 The Role of ICT Integration in Financial Management in Secondary Schools

4.6.1 The Role of ICT Integration in Financial Management

The third objective sought to evaluate the role of ICT integration in financial management in secondary schools Nzaui-Sub County. Financial management is one of the performance indicators of any institution because any operational or developmental decision in a school is based on the financial position of the school. The application of ICT in institutional financial management can be used to support the genera1 financia1 operations of a school in areas such as budgeting, procurement, payment of school fees, general accounting and reporting, cash flows and payroll management. The respondents were given a number of parameter questions concerning the integration of ICT in financial management in secondary schools. They were given a Likert scale of 5 grades as follows: Strongly Disagree (SD); Disagree (D); Neutral (N); Agree (A); Strongly Agree (SA). The results of the study are captured in Table 4.13.

Table 4.13: The role of ICT in financial control management

Statement	SD=1	D=2	N=3	A=4	SA=5	N	Mean	St. Dev
Our school uses ICT to prepare the school budget	13 (12.4%)	35 (33.3)	14 (13.3%)	30 (28.6%)	13 (12.4%)	105	2.95	1.274
ICT promotes the principles of accountability and transparency in financial management	02 (1.9%)	26 (24.8%)	11 (10.5%)	48 (45.7%)	18 (17.1%)	105	3.51	1.102
Our school uses ICT for procurement	09 (8.6%)	56 (53.3%)	19 (18.1%)	19 (18.1%)	02 (1.9%)	105	2.51	0.952
Our school uses ICT tools for financial accounting	15 (14.3%)	41 (39.0%)	12 (11.4%)	24 (22.9%)	13 (12.4%)	105	2.80	1.289
Our school has installed an integrated ICT software for real time financial reporting	16 (15.2%)	52 (49.5%)	17 (16.2%)	15 (14.3%)	05 (4.8%)	105	2.44	1.064
Our school uses integrated ICT software for payroll processing	19 (18.1%)	48 (45.7%)	12 (11.4%	20 (19.0%)	06 (5.7%)	105	2.49	1.161
Parents are able to access students' fees statement remotely through the school's financial management system	25 (23.8%)	52 (49.5)	10 (9.5%)	14 (13.3%)	04 (3.8%)	105	2.24	1.079

The first question asked the respondents to state whether their school uses ICT to prepare the school budget. From the responses given, 12.4% strongly disagreed; 33.3% disagreed; 13.3% were neutral; 28.6% agreed while 12.4% strongly agreed with the question. The mean score was 2.95 (Std Dev.1.274) while the mode was 2 showing that majority of the respondents disagreed with the question. Generally, 45.7% of the respondents were in disagreement with the question while 13.3% were unsure of this question. This implies that majority of the schools in Nzaui sub-county do not use ICT to prepare their school budgets. The findings of this study agree with the findings of a study by Mulinge (2020) in Machakos County who found out that most principals were not adequately knowledgeable and skilled on how to utilize ICT in the school budgeting

procedures. This explains why ICT has not been fully embraced by the principals in Nzaui Sub-County. This study found further out that most of the day schools use a manual system of financial budgeting and reporting.

4.6.2 The Role of ICT in Accountability and Transparency in Financial Management

The second question expected the respondents to express themselves on whether they believed that ICT promotes the principles of accountability and transparency in financial management. The findings of the study are presented in Figure 4.7.

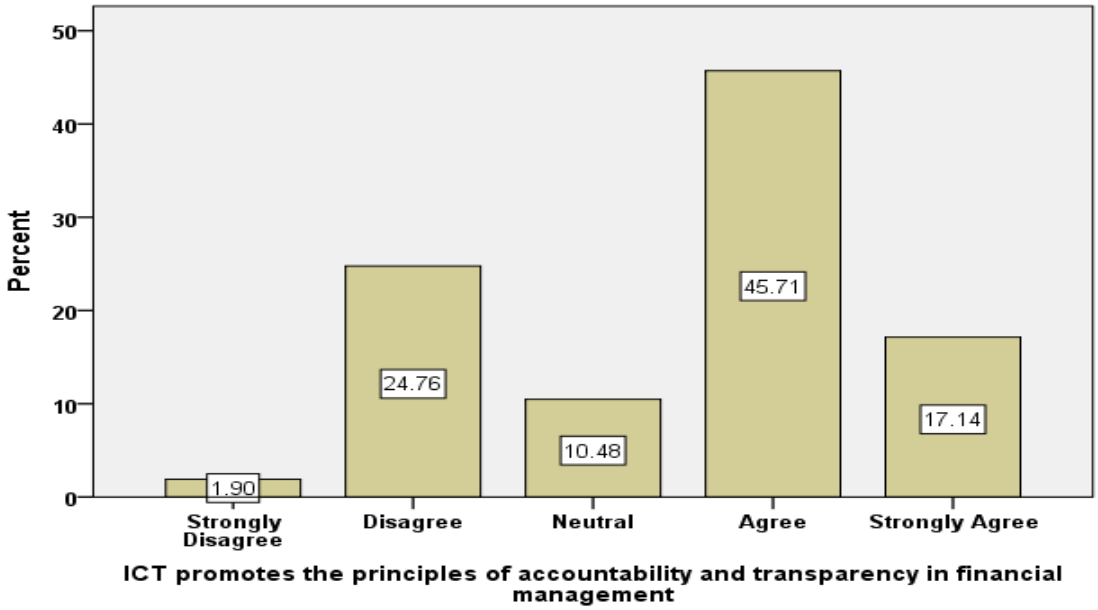

Figure 4.7: The role of ICT in accountability and transparency in financial management

The findings from the study were as follows: 1.9% of the respondents strongly disagreed with the question; 24.8% disagreed; 10.5% were neutral (not sure); 45.7% agreed while 17.1% of the respondents strongly agreed that ICT helps in promoting the principles of accountability and transparency in financial management in secondary schools in Kenya. The mean computed for the question was 3.51 (Std Dev = 1.102)

with a mode of 4 implying that majority of the respondents were in agreement with the question. Indeed, through the use of ICT one is able to trace the flow of school finances, thus promoting the principles of accountability and transparency. These findings concurs with the study conducted by Olayinka (2020) who concluded that ICT can help curb cases of school administrators from misusing or misallocation of financial resources because of the increased accountability and traceability of the financial resources.

4.6.3 The Use of ICT for School Procurement

The third question asked the respondents to state whether their schools uses ICT for procurement. Procurement is the process by which a school acquires goods and services it needs through a tendering process. The findings of the study are captured in Table 4.14.

Table 4.14: The Use of ICT in school procurement

Responses	Frequency	Percent
Strongly disagree	9	8.6
Disagree	56	53.3
Neutral	19	18.1
Agree	19	18.1
Strongly Agree	2	1.9
Total	**105**	**100.0**

From table 4.14, the responses were distributed as follows: 8.6% of the respondents strongly disagreed with the question whereas 53.3% disagreed; 18.1% were neutral; equally those who agreed were 18.1% while 1.9% of the respondents strongly agreed with the question. The mean of the question was 2.51 (Std Dev.= 0.952) and the mode of 2 showing that majority of the respondents disagreed with the question. This implies that 61.9% of the schools in Nzaui sub-county do not use ICT in procurement and therefore still use manual systems in procurement. This findings are in sharp contrast

with the procurement systems in the United Kingdom and India in which all schools are compelled by law to publish all the school tenders on their website. The tender bidding is done online and the results of the tender are also communicated online, Tondeur, Braak, & Valcke (2007). Therefore, schools in Nzaui Sub-County should be encouraged to adopt or integrate ICT in their procurement process because it promotes the values of participation, accountability and transparency by making the relevant information on tenders available online to vendors who wish to supply such goods and services to the school.

4.6.4 The Use of ICT in Financial Accounting

The fourth question asked respondents to state whether schools use ICT tools for financial accounting. Financial accounting involves the use of accounting soft wares such as Quick Books and Sage which are installed in computers or online systems known as E-accounting. The results of the findings are captured were distributed as follows: 14.3% of the respondents strongly disagreed with the question; 39.0% disagreed; 11.4% were neutral; 22.9% agreed while 12.4% strongly agreed that schools use ICT tools for financial accounting. The mean score was 2.80 (Std Dev = 1.289) and the mode was 2 which means that majority of the respondents especially those from sub-county schools stated that they do not have ICT tools for financial accounting. However, a sizeable number of schools (35.3%), mostly county and extra-county schools use ICT tools for financial accounting. These findings are in contrast with studies conducted by Tondeur, Braak, & Valcke, (2007) in schools in New Zealand which established that all public schools use a Schools Management System (SMS) for management, allocation of finances and accounting of the finances allocated to the school.

4.6.5 The Role of ICT in Real Time Financial Reporting

The respondents were further asked to state whether their school had installed an integrated ICT software for real time financial reporting. The findings are as follows: 15.2% of the respondents strongly disagreed with the question; 49.5% disagreed; 16.2% were neutral; 14.3% agreed while 4.8% strongly agreed with the question that schools have installed a real-time ICT enabled financial reporting programme. The mean was 2.44 (Std dev.1.064) while the mode was 2 showing that majority of the respondents disagreed with the question. On the overall, 64.7% of the respondents were in disagreement with the question, implying that a majority of schools in Nzaui sub-county have not installed an integrated ICT software for real time financial reporting. These findings are in contradiction with studies conducted in the U.K and reported by Katitia et al. (2019) in which all public schools are also expected to use electronic banking which enables the schools to generate real-time income-expenditure financial reports.

4.6.6 The Use of ICT for Payroll Processing

The sixth question enquired on whether schools have an integrated ICT software for payroll processing of its staff, both teaching and non-teaching. The findings are as follows: 18.1% of the respondents strongly disagreed; 45.7% disagreed; 11.4% were neutral, showing they were unsure; 19.9% agreed while 5.7% strongly agreed with the question. The mean of the responses was 2.49 (Std Dev = 1.161) while the mode was 2 which had been coded as ‘disagree’. This implies that many of the schools in Nzaui sub-county have not adopted an integrated ICT software for payroll processing. These are mostly sub-county day schools, which form the majority of schools in the area. Such schools process the payroll of the staff manually because of the limited number of staff that the school board of management can employ.

4.6.7 The Use of ICT for Parents to Access Students' Fees Statement Remotely

The last question on the role of ICT in financial management in secondary schools in Nzaui Sub- County asked the respondents whether parents are able to access students' fees statement remotely through the school's financial management system. The findings of the study are captured in table 4.15.

Table 4.15: Whether parents can access students' fees statement remotely

Responses	Frequency	Percent
Strongly disagree	25	23.8
Disagree	52	49.5
Neutral	10	9.5
Agree	14	13.3
Strongly Agree	4	3.8
Total	**105**	**100.0**

The responses were distributed as follows: 23.8% of the respondents strongly disagreed; 49.5% disagreed; 9.5% were neutral (not sure); 13.3% agreed while 3.8% strongly agreed with the question. The mean mark was 2.24 (Std Dev = 1.079) while the mode was 2 which had been coded as 'disagree'. Generally, 73.3% of the respondents stated that parents are unable to access their children's school fees statements remotely. Schools should therefore upgrade their financial management system so that parents are able to access their children's financial statements remotely. This will help parents to track the payment of school fees and the fees balances without being reminded by the school administration.

4.6 8 The Extent to which ICT Integration Influences Financial Management in Secondary Schools

The study further sought to establish the extent to which ICT integration influences financial management in secondary schools. Financial management encompasses all aspects of finance including budgeting, procurement, payroll processing, accounting

and reporting. The respondents were given a Likert scale coded as follows: 1-very low extent; 2-low extent; 3-moderate extent; 4-great extent and 5-very great extent. The findings of the study are as indicated in Table 4.16 and presented in Figure 4.8.

Table 4.16: The extent to which ICT integration influences financial management in secondary schools

Responses	Frequency	Percent
Very low extent	5	4.8
Low extent	20	19.0
Moderate extent	50	47.6
Great extent	25	23.8
Very great extent	5	4.8
Total	**105**	**100.0**

The findings from the table indicates that 4.8% of the respondents stated that ICT integration influenced financial management to a very low extent; 19.0% were of the opinion it influenced to a low extent while 47.6% of the respondents opined it influenced to a moderate extent. Those respondents who said it ICT influenced financial managements in schools to a large extent were 23.8% whereas 4.8% felt that it influenced to a very large extent. The findings of the question are further presented in Figure 4.8.

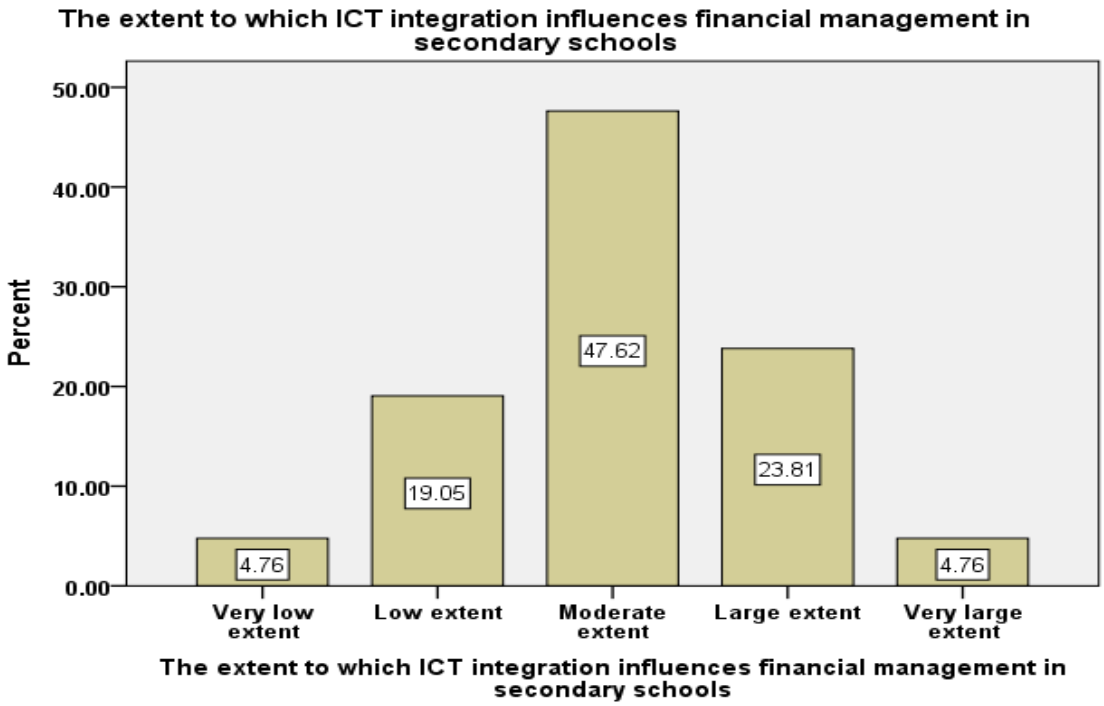

Figure 4.8: The extent to which ICT integration influences financial management in secondary schools

The findings as presented in the table 4.16 and figure 4.8 indicate that majority of the respondents were of the views that ICT integration influenced financial management in schools to a moderate extent. Descriptive statistics produced a mean value of 3.05 (std dev. =0.903) with a mode of 3. Both the mean and mode has been coded as 'moderate extent'. The use of ICT in financial management was noted to be promoting the principles of accountability and transparency in management. It was mostly used in financial accounting and financial reporting. These findings agree with Mue (2014) who avers that ICT can be useful in budgeting because it helps in the allocation of the school finances to various activities and programs and also curbs school administrators from misusing or misallocation of financial resources because of the increased accountability and traceability of the financial resources. Further, ICT can be used in school financial management to provide real time information to the important

stakeholders such as the government on the amount of funds the school has allocated to a programme, activity or vote head.

4.6.9 Correlations between ICT Integration in Financial Management and Supporting of School Administrative Activities

The study computed a Pearson's correlation analysis between the independent variable (ICT integration in financial management and the dependent variable (supporting school administrative activities in secondary schools). The value for the Pearson's correlation moment analysis index for ICT integration in financial management and the support in running school administrative activities was 0.854 implying that there is a very strong positive relationship between ICT integration in financial management and the support of school administrative work. Therefore, schools should invest and adopt the use of ICT in financial management because it improves the efficiency of the administrative work. The school principals should therefore acquire financial management ICT tools that would ensure improved and better management and reporting of the utilization of the school finances.

4.6.10 Transcription of the SCDE Interview on Financial Management in Schools

The researcher conducted an interview with the sub-county director of the education (SCDE) on the government's position on schools' integrated financial management system. This is the transcribed statement on whether the MOE has a standard programme that is used by all schools in financial management:

> *''The MOE does not have a standard financial management system to be adopted by all schools. However, there are standard reporting guidelines issued by the Ministry to the school principals because schools have differences in terms of learner population and categorization.''*

On the question of whether schools have adopted and integrated ICT in financial management, these are the remarks of the SCDE:

> *Many of the schools in the sub-county have not installed complex accounting and financial management systems because they are expensive to procure and even to operate. The Ministry of Education assigns limited financial resources to schools and most day schools may not be able to afford a sophisticated financial management system. Most day schools use simple tools for accounting and some of them use manual methods of accounting.''*

This admission by the Sub-county Director of Education clearly shows that a majority of schools have not integrated ICT in their financial management programs. An observation checklist use by the researcher did not show concrete evidence of the presence of the accounting and financial management systems in most schools though there was the presence of computers in many schools.

4.7 Summary of the Correlations between the Independent Variables and the Dependent variable

The independent variables of the study were: the role of ICT integration in influencing instructional teacher supervision in secondary schools; the extent to which ICT integration influences records management in secondary schools; the extent to which ICT integration influences financial management in secondary schools; while the dependent variable was the support in the administrative activities in secondary schools in Kenya, using Nzaui sub-county as a case study. From the findings, there is a very strong positive relationship between all the independent variables and the dependent variable at 0.01 level of significance level (2-tailed test) as follows: the role of ICT integration in influencing instructional teacher supervision (0.983); the extent to which

ICT integration in records management influences administrative activities in secondary schools (0.871); and the extent to which ICT integration influences financial management in secondary schools (0. 854). This therefore implies that if schools can integrate ICT in their operations, then there will be a general improvement in the discharge of administrative activities.

4.8 Data from the Observation Checklist

The data collected using the observation checklist is shown in table 4.17 below. This data was collected from 17 schools from Nzaui Sub-County, Makueni County.

Table 4.17: Observation Checklist Data

No	ICT Facility/Resource/ Device/Tool	Available	Not available	Available and accessible	Available but not accessible
1	Desktop computer/laptops	16	01	15	02
2	Internet connection	07	10	05	02
3	Cell Phone	17	00	16	01
4	Projector	10	07	10	00
5	Photocopier/scanner	14	03	12	02
6	Printer	13	04	12	01
7	Interactive Whiteboard	00	17	00	00
8	T.V	16	01	15	01
9	Radio	12	05	10	02
10	Video player	15	02	13	02
11	CCTV	04	13	04	00
12	Digital camera	00	17	00	00
13	Computer lab	09	08	09	00
14	Programme management soft wares such an exam analysis software	14	03	13	01

The findings show that all the schools sampled has a cell phone with majority of schools having a computer/laptop, photocopier/scanner, printer, T.V, radio, video player and a programme management soft wares such an exam analysis software. However, none of the schools had an interactive whiteboard or a digital camera. It was further established that in most schools, the T.V and radio were used for entertainment and not for academic instructional or administrative purposes. It is therefore the duty of the school principals and the deputies to ensure that the ICT tools available in schools are used for administrative and academic functions other than just for entertainment purposes.

CHAPTER FIVE

SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

5.1 Introduction

This chapter presents the summary of the findings according to the objectives of the study. It also presents the conclusions and the recommendations of the study.

5.2 Summary of the Study

The purpose of the study was to investigate the role of ICT integration in supporting administrative activities in secondary schools in Nzaui Sub-County, Makueni County, Kenya. The study was guided by three objectives: to determine the role of ICT integration in instructional supervision of secondary school teachers in Nzaui Sub-County; to investigate the role of ICT integration in administration records management in secondary schools in Nzaui Sub-County; and to evaluate the role of ICT integration in financial management in secondary schools Nzaui-Sub County. Data was collected from 106 respondents distributed as follows: school 14 principals, 15 deputy principals, 13 deans of studies, 16 ICT officers/ teachers, 16 bursars, 14 librarians and 17 secretaries and the Sub-County Director of Education (SCDE). These respondents were selected because they are directly engaged in the school administrative activities and functions.

5.3 Summary of the Findings

5.3.1 The Role of ICT Integration in Instructional Supervision of Secondary School Teachers in Nzaui Sub-County

The first objective sought to determine the role of ICT integration in instructional supervision of secondary school teachers. The use of ICT in teacher supervision entails capturing teachers' details such as arrival and departure time, lesson attendance and

preparation of and submission of professional documents using ICT tools. The findings showed that most schools have installed ICT systems that monitor the arrival and departure of teachers and lesson attendance. However, majority of these schools do not use ICT for the submission of professional documents.

The findings further showed ICT integration influenced instructional supervision of teachers to a great extent. In order to test the strength and direction of the relationship between the independent variable (the role of ICT in instructional supervision of teachers) and the dependent variable (ICT integration in supporting school administrative activities in secondary schools), the Pearson's correlation analysis was computed and the value was 0.983 implying that there is a very strong positive relationship between ICT integration and the instructional supervision of teachers.

5.3.2 The Role of ICT Integration in Administration Records Management in Secondary Schools in Nzaui Sub-County

The second objective investigated the role of ICT integration in administration records management in secondary schools in Nzaui Sub-County. Record keeping is a very important function of the school administration because it would be impossible to run an institution if records are not well and safely kept for the future use or when needed. Records range from staff, students' and parents' data to management information such as inventory and fees payments records.

The study found out that most schools use ICT to capture and store personal data of teachers and academic and non-academic data of student. However, most day schools have not fully integrated ICT in library services. The findings further indicated that ICT integration influenced school records management to a large extent. A Pearson's correlation analysis produced a value of 0.871 implying that there is a very strong

positive relationship between ICT integration and the effectiveness and efficiency in records management in secondary schools.

5.3.3 The Role of ICT Integration in Financial Management in Secondary Schools Nzaui-Sub County.

The third objective sought to evaluate the role of ICT integration in financial management in secondary schools Nzaui-Sub County. The integration of ICT in financial management in schools can be used to support the genera1 financia1 operations in areas such as budgeting, procurement, payment of school fees, general accounting and reporting, cash flows and payroll management. The study established that ICT promotes the principles of transparency and accountability in financial management. However, it was further established that most schools do not use ICT for procurement and that fewer schools use ICT for financial accounting and payroll processing.

The study further established that ICT integration influenced financial management in schools to a moderate extent. The Pearson's correlation moment analysis index for ICT integration in financial management and the support in running school administrative activities computed, produced a value of 0.854 which implies that there is a very strong positive relationship between ICT integration in financial management and the support of school administrative activities. This in essence means that schools which have integrated and adopted ICT in financial management have improved efficiency and effectiveness in financial management.

5.4 Conclusions of the Study

The purpose of this study was to investigate the role of ICT integration in supporting administrative activities in public secondary schools in Kenya using, Nzaui Sub-County in Makueni County as a case reference point. The study was guided by three objectives

which were the independent variables while the dependent variable was the administrative activities in secondary schools. This study concludes that since there is a statistically significant relationship between the independent variables and the dependent variables. Therefore, integration and adoption of ICT will greatly enhance administrative functions in secondary schools in Kenya. It will lead to better supervision of teachers, effective management of school records and efficient utilization of school finances.

The study established that ICT integration has been adopted in some aspects of school administrative activities such as the monitoring of the teachers' lesson attendance and arrival and departure time from school. However, ICT has not been fully embraced by teachers in the preparation and submission of professional documents.

The Study also found out that most sub-county day schools have not integrated ICT in their records management especially in the issuance of books in the library and inventory management. However, most schools have an integrated ICT system for keeping personal data of staff and students.

In terms of the financial management of the schools, the study found out that most schools do not have an integrated financial management system for accounting, procurement and payroll processing. Nevertheless, most schools in the extra-county and the county categories have integrated ICT in their financial management activities.

5.5 Recommendations of the Study

The school principals should train the teachers on how to integrate ICT in the delivery of the curriculum including the preparation and submission of professional documents such as schemes of work, lesson plans online. To this end, the teachers' employer (TSC)

should consider making ICT literacy as one of the minimum requirements for promotion of serving teachers and principals and for recruitment of new teachers.

The school administrators should automate all record management functions using ICT for easier storage, retrieval, sharing and auditing. All library and inventory management functions should be fully integrated using technology for easier tracking and traceability of all school text books and for efficient inventory management.

The school administration should upgrade the ICT systems for financial management so that they are able to integrate all the functional functions and activities such as procurement, payroll processing, school fees processing and accessibility, financial accounting and real-time financial reporting.

5.6 Suggestions for further Study

This research has conducted a study on the role of information communication technology integration in supporting secondary school administrative activities in Nzaui Sub-County, Makueni County, Kenya. It has focused on the three objectives of how principals integrate ICT in instructional supervision of teachers; ways in which principals integrate ICT in administration records management; and the extent to which principals integrate ICT in financial management.

From the findings of the study, the integration of ICT in the operations of the school administrative functions did not meet the expected standards due to some institutional limitations which were not covered in this study. This study therefore recommends that a further study should be conducted in another sub-county of similar dynamics to determine and address the challenges that face the integration of ICT in secondary schools in Kenya.

Secondly, this study was carried out in public secondary schools only in Nzaui Sub-County. This study suggests that another study be conducted in private schools to determine the extent to which they have embraced Information Communication Technology in their administrative functions. The findings of that study will be compared with the findings of this and similar studies conducted in public secondary schools in Kenya.

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APPENDICES

APPENDIX I: LETTER OF INTRODUCTION

Dear Respondent,

RE: REQUEST TO TAKE PART IN A RESEARCH STUDY

I am a Masters of Education student at Machakos University undertaking a study on **'The Role of ICT Integration in Supporting Administrative Activities in Secondary Schools in Nzaui Sub-County, Makueni County.** I humbly request you to fill this questionnaire as honestly as possible by ticking against the appropriate brackets or boxes or by writing in the spaces provided. The information given is for academic purpose only and it will be treated with utmost confidentiality. Do not write your name or that of your school anywhere on this questionnaire. Thank you.

Yours faithfully,

E55-2827-2019

PERIS MUSEMBI

APPENDIX II: RESEARCH QUESTIONNAIRE

Please fill the questionnaire below by either ticking in the appropriate box or writing in the spaces provided. Do not write your name on this questionnaire.

SECTION A: DEMOGRAPHIC INFORMATION

Please tick appropriately

1. Gender: Male ☐ Female ☐

2. Role in the school

Principal ☐ Secretary ☐ ICT officer ☐

Deputy Principal ☐ Librarian ☐

Dean of Studies ☐ Bursar ☐

41-50 years ☐ 51-60 years ☐

3. Years of service in your current station

5 years and below ☐ 6-10 years ☐

11-15 years ☐ 16-20 years ☐

Above 20 years ☐

4. Category of the school

Extra County ☐ County ☐ Sub-county ☐

SECTION B: ICT IN SUPPORTING ADMINITRATIVE ACTIVITIES IN SECONDARY SCHOOLS

6. To what extent does the availability and accessibility to ICT facilitate the running school administrative work?

A very large extent ( ) a large extent ( )

A moderate extent ( ) a low extent ( )

A very low extent ( )

SECTION C: ROLE OF ICT IN INSTRUCTIONAL SUPERVISION OF TEACHERS

7. Please respond to these statements by grading them as follows: SD-Strongly Disagree,

D-Disagree, N-Neutral, A-Agree, SA-Strongly Agree

Statement	**SD**	**D**	**N**	**A**	**SA**
Our school uses time attendance software to monitor teachers' arrival and departure time					
Our school uses ICT to supervise teachers' class attendance					
The school administrators use social network platforms for communication with the teachers					
Teachers use ICT to prepare their schemes of work					
Teachers use ICT to prepare their lesson plans					
Teachers use ICT to prepare their records of work					
Teachers submit their professional documents such as schemes of work and lesson plans online					
Our school uses ICT in timetabling					
Our school uses ICT in exam preparations and administration					
Our school uses ICT for administration of students' academic data					

8. To what extent does the integration of ICT influence instructional supervision of teachers in secondary schools?

A very large extent ( ) a large extent ( )

A moderate extent ( ) a low extent ( )

A very low extent ( )

SECTION D: THE ROLE OF ICT IN INSTITUTIONAL RECORDS MANAGEMENT

9. Please respond to these statements by grading them as follows: SD-Strongly Disagree,

D-Disagree, N-Neutral, A-Agree, SA-Strongly Agree

Statement	**SD**	**D**	**N**	**A**	**SA**
ICT makes record keeping more efficient					
Our school uses ICT in capturing personal data of staff and for payroll records					
Our school uses ICT for library services					
Our school uses ICT for administration of students' personal and non-academic data					
Our school has an ICT system for communication to parents and staff					
Our school has an ICT system for inventory management					
ICT integration has led to reduction of theft cases of the school text books and other stationery					

10. To what extent does the integration of ICT influence records management in secondary schools?

To a very large extent ( ) a large extent ( )

A moderate extent ( ) a low extent ( )

A very low extent ( )

SECTION E: THE ROLE OF ICT IN INSTITUTIONAL FINANCIAL MANAGEMENT

11. Please respond to these statements by grading them as follows: SD-Strongly Disagree,

D-Disagree, N-Neutral, A-Agree, SA-Strongly Agree

Statement	**SD**	**D**	**N**	**A**	**SA**
Our school uses ICT to prepare the school budget					
ICT promotes the principles of accountability and transparency in financial management					
Our school uses ICT for procurement					
Our school uses ICT tools for financial accounting					
Our school has installed an integrated ICT software for real time financial reporting					
Our school uses integrated ICT software for payroll processing					
Parents are able to access students' fees statement remotely through the school's financial management system					

12. To what extent does the integration of ICT influence financial management in secondary schools?

To a very large extent ( ) a large extent ( )

A moderate extent ( ) a low extent ( )

A very low extent ( )

Thank you for your time

APPENDIX III: INTRODUCTION LETTER FOR SCDE

Dear Respondent,

RE: REQUEST TO TAKE PART IN A RESEARCH STUDY

I am Masters of Education student at Machakos University undertaking a study on **'The Role of ICT Integration in Supporting School Administrative Activities in Secondary Schools in Makueni County, Nzaui Sub-County.** I humbly request you to allow me to interview you on a number of areas on the topic of study. The information given is for academic purpose only and it will be treated with utmost confidentiality. Thank you.

Yours faithfully,

E55-2827-2019

PERIS MUSEMBI

APPENDIX IV: INTERVIEW GUIDE FOR THE SCDE

1. What is the rate of uptake of ICT integration in school administration in this sub-county?
2. How do you disseminate the Ministry of Education's communications to secondary schools in this sub-county?
3. Does the MOE have a standard programme that is used by all schools in financial management?
4. What is your experience with principals in integrating ICT in the administrative functions?
5. To what extent have the principal been trained on ICT integration in school administrative functions?
6. Does the government fund the ICT infrastructure in public secondary schools?
7. What are some of the barriers encountered by school principals in the integration of ICT in school administrative functions?
8. What needs to be done in order to overcome the barriers you have mentioned?

Thanks a lot for your time

APPENDIX V: OBSERVATION CHECKLIST

The researcher observes and indicates whether the following ICT facilities and available and accessible in the school by ticking in the appropriate box below.

No	ICT Facility/Resource/ Device/Tool	Available	Not available	Available and accessible	Available but not accessible
1	Desktop computer/laptops				
2	Internet connection				
3	Cell Phone				
4	Projector				
5	Photocopier/scanner				
6	Printer				
7	Interactive Whiteboard				
8	T.V				
9	Radio				
10	Video player				
11	CCTV				
12	Digital camera				
13	Computer lab				
14	Programme management soft wares such an exam analysis software				

APPENDIX VI: RESEARCH PERMIT

REPUBLIC OF KENYA

NATIONAL COMMISSION
SCIENCE TECHNOLOGY &

Ref No85720 Date of 1 /July202

RESEARCH LICENSE

This is to Certify that Ms.. MUSEMBI Peris Syomiti of Machakos University, has been licensed provision of the Science, Technology and Innovation Act, 2013 (Rev.2014) in Makueni on communication technology integration in supporting secondary schools administrative county Kenya for the period ending : 17/July/2024

License No: NACOSTI/P/23/276 79

85720

Applicant Identification

Director
NATIONAL COMMISSION FOR SCIENCE TECHNOLOGY & INNOVATION

Verification QR

NOTE: This is a computer generated License. To verify the authenti
Scan the QR Code using QR scanner

See overleaf for

APPENDIX VII: RESEARCH PLAN

Activity/Month	July, 2023	August, 2023	Sept, 2023	Oct-Dec, 2023	Jan-Aprl, 2024	May-Aug, 2024
Acquisition of research permit						
Pretesting of research instruments and Pilot study						
Collection of data						
Data cleaning, coding and analysis and interpretation						
Writing of final project report						
Project assessment and review by external supervisor						
Revision of the final project						

APPENDIX IX: LOCATIONAL MAP