

**A SITUATIONAL ANALYSIS OF THE USE OF INFORMATION AND
COMMUNICATION TECHNOLOGY IN ADMINISTRATION
OF PUBLIC SECONDARY SCHOOLS IN BUNGOMA EAST
SUB-COUNTY, KENYA**

BY

NANCY KASANDI LIDAVA

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THE DEGREE OF MASTER OF EDUCATION IN EDUCATIONAL
ADMINISTRATION**

DEPARTMENT OF EDUCATIONAL MANAGEMENT AND FOUNDATIONS

MASENO UNIVERSITY

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DECLARATION

CANDIDATE'S DECLARATION

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

.....

NANCY KASANDI LIDAVA
PG/MED/088/2008

.....

DATE

SUPERVISORS' DECLARATION:

This thesis has been submitted for examination with our approval as university supervisors.

DR. E.M.W SIMATWA

.....

SIGNATURE

.....

DATE

Department of Educational Management and Foundations
Maseno University

.....

.....

PROF. FRANCIS C. INDOSHI

SIGNATURE

DATE

Department of Educational Communication, Technology and Curriculum Studies
Maseno University

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DEDICATION

This work is dedicated to my late parents: Mr. Mark Lidava and Mrs. Joyce Ingado Lidava, who laid the foundation upon which this work has been raised. Dad and mum, I cherished your educational inspiration and I dedicate this work posthumously to you.

ABSTRACT

The Government of Kenya initiated policies on ICT to enhance efficiency and effectiveness in educational management. Many schools in Kenya have invested in computers for school administration. Despite this effort, only 43% of secondary schools in Bungoma East Sub County had embraced ICT. Its use was however not delivering desired outcomes in educational administration for there were reported leadership inefficiencies in the schools. This was reflected in poor discipline of students and frequent demotions of administrators. The purpose of this study was therefore to analyze the use of ICT in administration of secondary schools in Bungoma East Sub County. Objectives of the study were to: establish the use of ICT in human resource management; examine use of ICT in school financial administration; establish use of ICT in monitoring and evaluation of programs; establish use of ICT in public relations and establish challenges faced by administrators in their use of ICT in administration of secondary schools in Bungoma East Sub county. Descriptive survey design was used. Scientific Management Theory was embraced in the study. The study population comprised of 20 principals, 200 Heads of Departments (H.O.Ds) and 20 accounts clerks. Study sample comprised of 18 principals, 180 H.O.Ds and 18 accounts clerks. Saturated sampling technique was used to select all the groups. Questionnaire, interviews and observation schedule were used as instruments of data collection. Validity of instruments was ascertained by experts in the Department of Educational Management and Foundation. Reliability was determined by piloting instruments in two schools. Quantitative data was analyzed by use of descriptive statistics such as, percentages and frequency counts while qualitative data was organized into themes and sub-themes as they emerged from the data. Findings of the study showed that in human resources management, mobile phones were used for communication, while computers were used to process and store data. However, there was no computer use in conferencing, selection and recruitment of staff in the schools. In financial administration, computers were used in budget preparation and in maintaining records but there was no use of Credit Control Module, Automatic Electronic Fee Control Module and Swipe-credit cards. In monitoring and evaluation, exam results were analyzed and stored electronically, however, e-log in system, e-space allocation, e-meal Control Module, monitoring cameras and screeners were not used in the schools. In public relations, 8 (44.40%) schools had a functional e-mail address that enhanced networking. The challenges experienced included; shortage of facilities and insufficient skills among workers. The study concluded that ICT had been integrated in school administration but it was narrowly used in most areas. The study recommends that; ICT use in administration be made broad, school administrators be trained in ICT use and enough facilities be provided to schools. The findings of this study are significant because they will help policy makers to come up with strategies to curb challenges facing effective ICT use in administration of secondary schools.

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LIST OF ABBREVIATIONS AND ACRONYMS

CASA	Computer Assisted School Administration
CBI	Computer Based Instruction
EFA	Education For All (EFA)
EMIS	Education Management Information System
ERNWACA	Educational Research Network for West and Central Africa
ICT	Information Communication Technology
IICD	International Institute for Communication and Development
KESSP	Kenya Education Sector Support Programme
MDGs	Millennium Development Goals
MOE	Ministry of Education
MoES&T	Ministry of Education, Science and Technology.

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CHAPTER ONE

INTRODUCTION

1.1 Background to the Study

Information and Communication Technology (ICT) is an important component in administration of educational institutions. The Millennium Development Goals (MDGs) put in place by the United Nations in 2000 highlighted the importance of ICT in the global development agenda. It is important to note that, educational institutions in the 21st century are increasingly becoming complex multidimensional organizations requiring tremendous input in terms of human resource administration, financial resources management, monitoring and evaluation of physical resources and in public relations. Such school working environments require that the administrators are aided technologically in their duty performance so that they are not overwhelmed. The work of administrators has changed in organizations, including schools, from manual and mechanical to electronic data processing, storage, output and communication hence the importance of ICT use. Taylor and Hogenbirk (2001) suggested that the transformational rate of change might find professionals outdated in their own profession, thus countries that do not integrate policies of scientific and technology development with education components will be left behind. These developments demand therefore that educational institutions modernize their tools of conducting business to enhance the effectiveness of management and leadership.

In technologically developed countries like America, ICT in administration was in use as early as 19th century (Fullan, 2001). Countries continue to invest colossal amounts of money in ICT implementation in schools. The United Kingdom, according to European Commission Report (2006), for instance, spent €49M in four years only for ICT test bed project in 28 schools.

According to Balanskat et al (2006) recent studies in UK revealed that only 10 –15 percent of schools competitively and effectively use ICT to improve educational outcomes.

In Cyprus, studies by Maki (2008) stipulated that ICT plays a vital role in supporting powerful, efficient human resource administration in the education sector: technology can be used from student administration to various resource administration in an education institution. According to Zainally (2008), ICT provides several facilities and possibilities for educational administrators to perform their tasks. In this regard, Voogt and Knezek (2008) observe that the development of computer technology from processing information to supporting communication augmented its potential for education.

In Uganda, study by Ddungu (2006) in Gayaza high school on Good Practices Necessary for Effective Implementation of ICTs in secondary schools showed that ICT was used in human resource management by enhancing communication between the administrators and staff members through a common school email address (gayazahigh2005@yahoo.com). The study revealed that ICT use benefited the school by creating a closer link between the administration and personnel, reducing stress levels among leaders of the school and enhancing general good performance. It enabled teachers to submit their typed exams right before the targeted time and this made human resource administration very easy for the leaders. However the Ddungu study used a case study design which involved only one secondary school in Uganda hence the results may not be a representative mirror of many other schools in Kenya, The present study sought to fill these gaps by using a descriptive survey design that involved all schools that had embraced use of computers to find how ICT is used in Human Resource administration of 18 secondary schools in Bungoma East Sub county, Kenya. Blandford (cited in Lancaster, 1989) asserted that

“ICT is a network to provide the right information to the right person at the right time at a minimum cost”. ICT enables managers and administrators to update and record changes in the institution’s environment, to produce documents regarding operational activities of the school, to support decision and action making due to the fact that computer systems present the ease of exchange of information. The importance and use of ICT in secondary school administration cannot be over-emphasized. In February 2010, the Kenya National Examination Council issued a circular to all Provincial Education Officers, District Education Officers and heads of secondary schools registering for the 2010 Kenyan Certificate of Secondary Education, that compelled them to embrace ICT in registration of candidates for national examination (KCSE). This was published in the Standard Newspaper, as reported by Otieno (2010): that it was compulsory for the KCSE candidates of 2010 to register online on the Kenya National Examination Council (KNEC) website, according to the new guidelines set out by the examination council. This was a positive step towards the achievement of Millennium Goals.

In school financial administration, the adoption and utilization of Information and Communication Technology (ICT) is gradually becoming a major requirement for improvement in the allocation, efficiency and effectiveness of service delivery and productivity and in accessing funds from donor partners in the educational sector (Gyaase; Anokye-Sarfo and Bediako 2013). With respect to financial management, ICT combines accounting principles and concepts with the benefits of an information system which is used to analyze and record business transactions, prepare financial statements and provide accounting data for the intended users (Sloan, 2001).

Monitoring and evaluation is a vital component of educational administration. Constant communication is part of the monitoring and evaluation system for overall effectiveness of

administration. ICT helps in providing timely information to all concerned. It includes communication between the important stake holders of the system such as sending e- circulars to the students, staff, parents, education officers and the public at large. The dissemination of e-kiosks is also a very important item to be considered (Krishnaven & Meenakumari, 2010). They further postulate that computers can be used extensively for educational administration and hence they identify the following as some of the areas where computers can be used for effective educational monitoring: payroll and financial administration, administration of students' data, inventory management, library systems and creation of class webs where all information of a particular class is posted and stake holders can be in a position to monitor every class achievement from a far. Results of Ayere's study (2008) on comparison of ICT application in NEPAD and NON-NEPAD schools in Kenya, indicated that, the NEPAD schools had embraced the use of ICT in monitoring and evaluation, enforcing policies like monitoring teaching loads, monitoring the performance of income generating venture in terms of profit and losses incurred. Such information was to help in implementing agreed policies in the sense that corrective action can be taken at a very short notice to ensure that the policies are maintained. ICT gadgets were used to monitor performance indicators like staff load, staff-student ratio and so on for the purpose of making formative and summative decisions.

The Ddungu (2006) study at Gayaza School established that the school had gained a milestone in public relations out of its involvement of ICT in administration; the school is a center for hosting ICT conferences. This acts as advocacy point for the school since many of the donors and high profile guests attend the conferences. The school has been greatly helped to link to the outside world through such conferences. This has resulted from the growth of voice and data communications, by use of internet. The Ddungu research on public relation aspect was fairly

narrow because it failed to incorporate aspects of internal public relations. Public Relations also include cultivating a good relationship between the internal leaders and their staff. The present study fills this knowledge gap by incorporating use of ICT in aspects of public relations between staff members, students and internal leaders as well as PR with the external world. In order to cultivate such, motivational staff development plays a big role. According to Torrington, Hall and Taylor (2005), training which is paid for by the employer is a good deal less likely to raise job mobility than that paid for by the employee or the government. Remuneration should be considered in terms of total rewards which are all the employers available tools that may be used to attract, retain, motivate and satisfy employees while enhancing Public Relations with them (Armstrong, 2005). One way of enhancing staff development is by sponsoring the staff for ICT skills seminars and workshops. Other researchers have carried out studies in different schools in Kenya on the use of ICT, (Mue, 2006; Gakuu & Kidombo, 2013 and Bonareri, 2013) but these researches concentrated on its use in human resource and financial management, leaving out the vital aspect of ICT use in public relations and monitoring and evaluation. A gap that the present study sought to fill.

From early 1990s, increasing numbers of secondary schools in Kenya acquired computers for use in the institutions. In an effort to bring the potentially empowering benefits of ICT to the students, the government of Kenya embarked on a massive drive to turn around the education sector by putting in place policies to support the use of ICT in pedagogical and administrative sectors. The purpose was to enhance efficiency and effectiveness in both learning and administrative duties. Kenya, despite being a third world country, is trying to cope up with the international demands of being abreast with current information technology. After several years of effort, Kenya promulgated a National ICT policy in January 2006 that aims to improve the

livelihood of Kenyans by ensuring the availability of accessible, efficient, reliable and affordable ICT services. The policy emphasizes the integration of ICT in education sector to improve access, learning and administration. Despite these efforts, earlier studies have shown that ICT implementation is faced by several challenges.

Menjo and Boit (2013) carried out a study on the challenges of using information communication technology (ICT) in school administration in Kenya. The study was conducted in 12 randomly selected secondary schools that had introduced computers in, Nandi North District. The 128 respondents comprised of teachers and principals. The study revealed that major challenges faced by the schools were; lack of adequate training in ICT for teachers and administrators, limited computer hardware dedicated to administrative work, lack of time and absence of appropriate administrative software. The study in Nandi North schools did not involve the financial administrators (accounts officers), so as to establish the challenges faced by them given that financial administration is a vital pillar of school administration. The study also had a lower number of respondents as compared to the present study which had 216 respondents. The present study sought to fill this gaps by getting the views of accounts clerks on the challenges faced in school administration and by using a more representative number of respondents, as Fraenkel and Wallen (2009) postulated, the more the number of respondents, the more representative the results become.

A study by Oguta, Egessa and Musiega (2013) on the effects of ICT application in strategic educational quality standards management in secondary schools in Bungoma County was conducted in 32 secondary schools selected by stratified random sampling. The study employed the cross sectional descriptive survey design. The study found out that ICT was applied in school financial management (SFM) infrastructure and human resource management (IHRM),

students' general welfare and in academic activities management. The study concluded that ICT had impacted positively on strategic educational quality standards management. However this study failed to address how ICT had been used in monitoring and evaluation and in public relations. It also did not establish challenges faced by administrators in their use of ICT in administration. This is the knowledge gap that the present study sought to fill.

Kukali (2013) did a study on Opportunities and Challenges for use and integration of ICT in Management of Public Secondary Schools in Bungoma South District. The study sought to establish opportunities available and challenges faced in use and integration of ICT in public secondary schools management in Bungoma South District. Specific objectives of the study were to establish challenges faced in use and integration of ICT in management and find out available opportunities for use and integration of ICT in management. The study findings established that there was a wide digital divide in use and integration of ICT in management regarding ICTs. Kukali's study objectives did not put into consideration how ICT is used administratively in Human Resource management, finances, monitoring and evaluation and in public relationship. The present study comes in handy to fill the gap.

In Bungoma East Sub county, many schools have set up their internal policies in connection with use of ICT in educational institutions, but the policies have tended to lay emphasis on integration of ICT use in curriculum and instruction and sidelined the administrative function, (Oguta, Egessa & Musiega, 2013). Furthermore, studies have been carried out in the sub counties neighboring Bungoma East sub county on ICT use in administration; hence there is a substantial literature about this in those neighboring sub counties. For example, Wanjala (2013) did a study on Teachers' perceptions on the use of ICT in the administration of public secondary schools in

Kimilili District (Presently Bungoma North Sub County) where results showed that most teachers had positive attitude towards ICT use in administration and hence had embraced its use. Kukalis' study on use of ICT in schools in Bungoma South Sub county (2013) found out that the challenge of insufficient resources and lack of finances ranked highly, however, there is no substantial literature on use of ICT in administration of schools in Bungoma East Sub county in the crucial areas of; human resources, finances, monitoring and evaluation and public relations. More so, despite initiation of ICT policy in Kenya, only 43% of the schools in Bungoma East Sub County had embraced it. Even then, its use was not delivering desired outcomes in educational administration. This study seeks to respond to the existing gaps by analyzing the use of ICT in administration secondary schools in Bungoma East Sub county.

1.2 Statement of the Problem

As the availability and use of ICT continues to expand, educational institutions need to incorporate its use in administrative functions. ICT in management of schools is recognized for information storage, effective word processing and efficient statistical production, effective human resource management and efficient communication. In school financial administration, the adoption and utilization of ICT is a major requirement for improvement in the efficiency and effectiveness of service delivery and productivity in the educational sector. Earlier researches have shown that ICT can be used extensively in the areas of: payroll and financial administration, administration of students' data, inventory management, library systems and creation of class webs so as to monitor every class achievement from a far. Despite initiation of ICT policy in Kenya, only twenty (43%) of schools in Bungoma East Sub county had automated some of their functions, its use was however not delivering desired outcomes of efficiency and effectiveness in educational administration. There had been inefficiency based demotions among

administrators of secondary schools in the sub county in the year 2012, furthermore, 7 (15.21%) of the schools were reported to have frequent indiscipline cases among students, mostly arising from technological changes which led to their frequent suspensions. Statistics of suspensions of students and demotions of administrators (Principals, H.O.Ds, and Accounts clerks) in the year 2012 among sub counties of Bungoma County showed that Bungoma East Sub County had the highest number of administrators demoted; 8 (50%) and the highest number of suspensions among students; 42 (43.30 %) as compared to the other surrounding sub counties of Bungoma County. The second highest which was Bungoma Central only had 4(25%) demotions and 21(21.65%) suspensions, which was only half the cases in Bungoma East Sub county. Bungoma North and Bungoma South each had 2(12.5%) demotions among administrators and 16(16.49%) suspensions among the students. There was therefore need to carry out this study in secondary schools in Bungoma East Sub county so as to analyze how ICT was being embraced in the different aspects of administration. Moreover, owing to the absence of substantial literature on the ways in which ICT was used in human resource management, financial management, monitoring and evaluation, public relations and the challenges of ICT use in secondary schools in Bungoma East Sub county, the study sought to fill the knowledge gap by establishing the views of school Principals, H.O.Ds and Accounts Officers on these issues. It is against this background that this study sought to establish how ICT is used in administration of secondary schools in Bungoma East Sub county

1.3 Purpose of the Study

The purpose of this study was to analyze the use of ICT in the administration of schools in Bungoma East Sub County.

1.4 Objectives

The study was guided by the following objectives

- i. Establish the use of ICT in human resource management in the schools;
- ii. Examine the use of ICT in financial administration of the schools;
- iii. Establish the use of ICT in monitoring and evaluation of programmes in the schools;
- iv. Establish the use of ICT in public relations in the secondary schools; and
- v. Establish challenges encountered by administrators in the use of ICT in the secondary schools' administration.

1.5 Research Questions

This study was guided by the following research questions:

- i. What is the role of ICT in human resource management in the secondary schools?
- ii. In what ways is ICT used in financial administration in the secondary schools?
- iii. What is the role played by ICT in relation to monitoring and evaluation of programmes in the secondary schools?
- iv. In what ways have the secondary schools embraced the use of ICT in public relations?
- v. What challenges are encountered by school administrators in their use of ICT in administration of secondary schools in Bungoma East Sub County?

1.6 Significance of the Study

The findings of this study are significant because they serve as a reference point for heads of secondary schools on how to effectively embrace ICT use in the administration of their schools

in the areas of finance, human resource management, monitoring and evaluation and in public relations in order to enhance efficiency. The findings are also significant to policy makers because they will be helpful in establishing the challenges facing use of ICT in school administration, this findings will therefore give an insight in their planning on the need to effectively curb these obstacles so as to make institutions' administration much easier than before. This study also benefits MOEST in general for is a motivation for heads of institutions countrywide to implement MOEST's policies on full integration of ICT in the education system.

1.7 Scope of the Study

The study was confined to secondary schools in Bungoma East Sub County that had embraced the use of computers in their management by the year 2013. This was because by around this period of time, most schools in Bungoma East Sub county exhibited a lot of poor managerial outcomes, ranging from low academic performance to poor discipline, some of these schools with low performance had already implemented ICT use. That indicated that the expected outcome was not being delivered hence the need to establish if ICT was actually effectively used in administration. The respondents involved in the study were; secondary school principals, H.O.Ds and Accounts clerks. The study was confined to use of ICT in administration of secondary schools in the sub county.

1.8 Limitation of the Study

According to Best and Kahn (1993), limitations are conditions beyond the control of the researcher that may place restriction on the conclusions of the study and their applications to other situations. One key limitation that was encountered in this study included failure by some of the respondents to complete some parts of the questionnaire as this depended on the level of

commitment and availability of time. This was countered by use of observation schedule and interview schedule. This study was limited because it was confined to both public and private secondary schools in this sub county that had embraced use of computers.

1.9 Assumptions of the Study

The study was carried out on the basis of the following assumptions:

- i. That the ICT gadgets available in their schools were used in the administration of human resources, finances, public relations, and in monitoring and evaluation of programs.
- ii. That heads of different departments and other members of departments were allowed access to the use of ICT gadgets in their administrative tasks.

1.10 Theoretical Framework

The study was based on Fredrick Taylor's Scientific Management Theory also known as Taylorism (Boundless, 2016). The theory that was founded in 1911 describes how the application of scientific methods to the management of workers greatly could improve productivity. The theory was based on four principals of scientific management which were: Replace the rule-of-thumb work methods with methods based on a scientific study; scientifically select, train and develop each worker rather than passively leaving them to train themselves; cooperate with the workers to ensure that the scientifically developed methods are being followed; divide work nearly equally between managers and workers, so that managers apply scientific management principals to planning the work and the workers actually perform the task. The main elements of the Scientific Management are; less production time, good working conditions, efficiency,

reduced cost of production, decreased inaccuracy, specialized supervision, standardization of work methods, equal task allocation and large bonuses for successful performance.

The theory was relevant to the present study because all the four principals and its many elements apply to the use of ICT in secondary school management. ICT is outlined as a scientific method of management that if effectively applied in school administration, productivity improves (Krishnaven & Meenakumari, 2012). The theory was also relevant because it puts emphasis on accuracy. ICT use as a scientific method has the ability to reduce inaccuracy in management as earlier studies have proved (Ddungu, 2006). The second principal that calls for scientifically selecting, training and developing workers were also important components of the present study that were looked at under scientific selection and recruitment of staff using ICT gadgets and in staff development . Replacing of manual working methods in administration is emphasized in the first principal of Scientific Management Theory Just as it is emphasized in the present study. Rule of thumb methods like paper letter delivery to parents, student and other stake holders can be replaced by scientific ICT based method like e-mailing and faxing letters. This saves time and ensures accuracy. If the manual work is replaced by the machine methods of working (use of ICT gadgets), if the workers are developed skill-wise (staff development in ICT) and with cooperation and even distribution of work between stake holders in schools(teamwork), there is every likelihood that productivity will greatly improve. The relevance was also pegged on the fact that the theory advocated for scientific supervision seen in the use of ICT surveillance gadgets and software in monitoring. The theory therefore supports the use of ICT in educational administration as a scientific management method. The Theory was used in this study because its principals and elements formed the basis on which ICT use in secondary schools' administration was gauged. In general, Taylorism advocates for all that ICT stands for, hence its relevance.

1.11 Operational Definition of Terms

In this study, the key terms are defined. This section draws attention to the following key terms as used in the study:

Education administration:

The practice, tasks and communication involved in the institution of learning so as to achieve the mission and goals of the institution

Human resource management

Means the strategic and comprehensive approach to managing people and the work place, culture and environment. It consists of activities that can be tied together with the aim of achieving direction of employees, their knowledge, skills, motivation, and behavior needed for achievement of actual development and strategic goals of an organization like a school.

Information Communication Technology:

The technologies including computers, telecommunication and audio-visual systems, that enable the collection, processing, transportation and delivery of information and communication services to users appropriately, securely and fruitfully in learning, employment, and administration

Public relations:

Efforts to establish and maintain a positive image with the public. The way institutions communicate with the public and media with an aim to create and maintain a favourable image

CHAPTER TWO

LITERATURE REVIEW

2.1 Introduction

This chapter presents a review of literature related to the study. This section examines the literature under the following subtopics: ICT use in Human Resource Management, ICT use in financial administration of schools, ICT use in monitoring and evaluation, ICT use in public relations and the challenges faced by administrators in the use of ICT.

2.2 Use of ICT in Human Resource Management

Human resources are defined as a total knowledge, skills, abilities, creative strength, motivation and loyalty that an organization have in employed workforce. It consists of activities that can be tied together in the aim of achieving direction of employees, their knowledge, skills, motivation, and behavior needed for achievement of actual development and strategic goals of an organization like a school (Avison, 2003). Kwaku (2004) postulates that HRM is to do with staff administration which includes aspects like recruitment and work allotment of faculty and staff, their attendance and leave management and performance appraisal. This also includes relevant communication to and from the institution. He emphasizes that staff administration done through ICT helps in processing of voluminous records in a quick, meticulous, and impeccable manner thereby making data retrieval easier,

The need for a systematic and holistic ICT approach to HRM should lead to improvement of quality product and service aspects of HRM such as employment, continual education and association. HRM involves several activities like: Strategy planning, recruitment, selection, success monitoring, motivation and awards, education development and professional

development. Avison (2003) come up with an ICT Human Resource Professional Module that entails the description of an employee's personal data, formal education, professional education and training, professional engagement, publications, certificates, and awards and association membership that was stored and used on computers in organizations. The use of data in school administration currently has multiple measures and it acts as an eye opener to administrators in demographics, school processes, student learning, as well as perceptions and projections (Bernhardt 2000).

Krishnaveni and Meenakumari (2012) carried out a study on Usage of ICT for information administration in higher education institutions. This was a case study involving one university in India, survey method was used. The study results concurred with the postulation by Salerno (2009) that affirms that, the various ways of introducing technology in educational administration are the following; Sending e-mail notices and agendas to staff, rather than printing and distributing them, Submission of lesson plans through e-mail, Foster technology growth by asking parents to write, e-mail addresses on medical forms. Insist that all teachers create a class Web page, attend technology conferences to see what other schools are doing to integrate technology, admissions through web-enabled services. and by monitoring all day-to-day activities of the institution personell. The study by Krishnaveni and Meenakumari was done on a university and was not concerned with the secondary school education, hence living a gap to be filled by the present study. Further more , this earlier study was a case study, involving only one learning institution. The present study expands the sphere to 20 learning institutions (secondary schools) in Bungoma East Sub county.

Afshari et al (2011) did a study whose purpose was firstly to identify the extent to which Iranian secondary school principals used computers and secondly to explore the relationship between a

number of variables related to the use of ICT. Findings indicated that four factors played a role in explaining the level of computer use by principals. These factors included high level of computer access, strong perceptions of the attributes of ICT, high level of computer competence, as well as the high level of transformational leadership behaviors. The selected factors used in this study were based on Rogers' (2003) diffusion theory, Technology Acceptance Model. The Iranian study had the limitation of confining itself to principals as respondents. The present study expands the respondent sphere to other administrators including heads of departments and accounts clerks.

Ben-Zion Barta *et. al.* (1995) asserts that Computers can be used extensively for educational administration. The following are some of the areas where computers can be used for effective educational administration in the view of Barta: General administration, administration of student data, inventory management, Personnel records maintenance, student registration/enrolment and computerised lesson attendance system, e-media and e-circulars for communicating with staff on official matters.

A study carried out in schools in India on the use of ICT ("Computer", n.d) used a survey descriptive design. The study surveyed 30% of the Indian secondary schools most of which were urban. The purpose of the study was to find out the importance of using computers in schools. The findings of the study were that the use of computers was very fundamental in human resource management, financial administration and material resource management in schools. In the area of human resource management, the study established that ICT can be used to store personal details like the name, address, telephone numbers, qualifications and experience, salary

and health data of personnel. This can provide a basis for decision making in recruiting and selecting, termination, education and health of the workers.

The study further detailed the personnel details that were stored on computers on each employee in the Indian schools. This included the following: Application forms giving personal particulars like interview and test record, job history including transfers, promotions, and details of education and training record, details of performance, assessment and appraisal, disciplinary and health records. The advantages of such are that, one can quickly get information on the employee about qualification and training for recruitment, appraisal and pay review. The same study also confirmed use of computers in maintenance of student's data, which made it easy for the principals to manage the large number of students in the schools. In connection with this, computers were used in: preparation of course schedules and attendance of students. This enhanced an elaborate attendance system to monitor daily attendance of students which helped the administration to take appropriate measures.

Sheng, Nah and Siau (2005) emphasized that ICT has both tangible and intangible impact on productivity in an organization. Among the tangible impact that they took note of are; improved customer service quality, improved organizational efficiency and deeper knowledge and understanding of customers. Intangible impact that was noted included; improved decision making ability, improved coordination, relationship with partners, and improved knowledge of information management and sharing. Other studies have shown that ICT has enhanced labour productivity. For example a study by Jorgenson and Stiroh (2000) calculated an approximately 43 % ICT contribution to total labour productivity growth in the United States in 1999.

According to Maki (2008) in her study in Cyprus secondary schools, administrative subsystems include: personnel administration, student administration, resource administration, financial administration and general administration. From this study, Maki, referring to a 2006 study by the European Commission in Cyprus revealed that schools in Cyprus used ICT both as a subject in the school curriculum and as a teaching tool in secondary schools. Maki identifies that the “Avakio” program is also administratively used for personnel and students data maintenance and general human resource administration. It also confirmed the earlier mentioned advantages of computer use. Consequently, the Cypriot MOE has implemented “Avakio” a computer program developed in Greece in order to manage information in secondary schools in relation to students’ data. Almost all secondary schools in Cyprus are using Avakio for administrative purposes such as student admission, enrolment, absenteeism, grading and final exams. As Vischer postulates, “it is vital for the school effective operation to create databases and firm foundations, to update contact details for pupils and parents essential for emergencies and general home conduct” (Vischer, 2001, p.43). Induction literature for new staff can be availed electronically; it can show the story of the organization, how it works, the family tree of management and functions and so on (Jefkins, 1998). This can expand the knowledge of the new staff members on the school organization. Empirical (2006) observed that, although significant steps had been taken by the Cypriot government regarding ICT in schools, the utilization of Information Technologies (IT) and Information Systems (IS) in educational management and administration still remained at an early stage.

Ddungu (2006) carried out a study in Gayaza high school of Uganda on Good Practices Necessary for Effective Implementation of ICTs in secondary schools. The study pointed out that the administration in Gayaza uses ICT so much in carrying out administrative duties. A lot of

communication happened through email to the staff members from the principal, deputy principal, H.O.Ds and among the teachers. A common email (gayazahigh2005@yahoo.com) was set up for quick communication by school members. The teachers were encouraged to sign up for email addresses and join the staff list in the yahoo account of the teachers. 90% concurred. It was further confirmed that the deputy's office had a password free computer that is accessible to all the teachers. The study confirmed that ICT use increased available work stations for teachers, created a closer link between the administration and the personnel, reduced stress levels among the leaders of the school and enhanced general good performance among the students and teachers. It enabled the teachers to submit their typed exams right before the targeted time and this made administration very easy for the leaders.

On staff development, the study confirmed that teachers had been trained in core ICT skills such as word processing, spread sheets, curriculum technology integration and internet research. Backer (2000) has argued that even where people are motivated to engage in an activity, they must have the competence necessitated to do so, hence the need for personnel staff development. In line with the same, the school sponsors teachers to go out for training workshops, conferences and opportunities in ICT to enhance their skill. Four teachers from the school attended an e-learning conference in Kenya in 2006 while six more were to attend one in Ghana in 2007. The study used case study method where only one school was surveyed. This is not enough evidence to necessitate generalization. The present study filled the gap by looking at 18 schools in Bungoma East District. The present study was also interested in finding out if Bungoma East Sub county secondary schools had attained high levels of use of ICT in human resource administration of secondary schools as did Gayaza High school.

Gakuu and Kidombo carried out a study to investigate the extent to which teachers in some selected secondary schools in Kenya use ICTs to deliver curriculum content for the purpose of improving the quality of teaching and learning. This study focused on three objectives namely: to evaluate the extent to which secondary school teachers use ICTs to deliver curriculum content; to establish the type of computer software used and to determine the difference in the use of ICT in instructional delivery between schools. This study used both qualitative and quantitative methods to collect data. Five secondary schools in urban and rural areas were targeted for study. The study inclined itself towards curriculum implementation and did not focus on the administrative use of ICT. This is the knowledge gap this study attempted to fill. The present study concerns itself with the use of ICT in administration of secondary schools in Bungoma East Sub county.

2.3 Use of ICT in Financial Administration in Schools

Financial management is considered as the activities involved in obtaining and affectively utilizing the funds for the efficient functioning of an organization. These activities include financial planning, financial administration and financial control (Paramasivan & Subramanian, 2010). Information and Communications Technology (ICT) has emerged as a dynamic field in financial management today. In this fast-changing world, advanced computers and contemporary software allows people to use computer-based information systems effectively (O'Brien, 1993; O'Brien, 2003). ICT has changed the way finance officers work. Technological advances in hardware and software have taken users of accounting information systems from the mainframe environment to mini and desktop computers and have become critical and integrated part of modern financial management system (Mensah & Marfo, 2009). ICT deployment facilitates substantial advantages as outlined by (Christiaens, Reyniers, & Rollé, 2010) which drives ICT adoption for financial management is; substantial savings on salaries due to fewer staff

requirement. Relatively cheap of the new technology when compare for instance the salary plus benefits for a secretary, substantial failing on overheads due to reduction in office space required as disk storage replaces filing cabinets, speed and accuracy of obtaining, processing, storing and retrieving information to aid decision making and improved communication between personnel.

Sheng, Nah and Siau (2005) confirmed in their study that ICT reduced costs of production in organizations, increased market share, saved on labour and gave rise to superior productivity. The adoption and utilization of Information and Communication Technology (ICT) in financial management is gradually becoming a major requirement for improvement in the allocation efficiency and effectiveness of service delivery and productivity and in accessing funds from donor partners in the educational sector. With respect to financial management, ICT combines accounting principles and concepts with the benefits of an information system which is used to analyze and record business transactions, prepare financial statements and provide accounting data for the intended users (Sloan, 2001).

Owala (1995) carried out a research on the state of IT at Salford University. The study showed that the university embraced ICT in financial administration since it was electronically connected to its suppliers and this made it possible to place requests for more materials through the computer using Electronic Data Interchange (EDI). This saved financial expenses and time. The present study looked into the use of ICT in schools in Bungoma East sub county to establish extend to which it was used for realization of the results confirmed by the other studies done outside Kenya, in financial administration. This is the gap this study attempted to fill.

A study done in India (“Computer”2009) confirmed that computers and ICT related gadgets are used in the following ways in the financial administration in schools:

i) Preparation and maintenance of pay slips. It is confirmed that this saves time, enhances accuracy and the records are legible. The data can be stored, records checked and that they are always available for further data analysis and preparation of summery reports. This has influenced many schools in India to use this technology.

ii) Financial accounting for gross salary and deductions helps schools to maintain financial record regularly on activities like: Income from students fee and other internal sources like donations, grants and expenditure, preparation of salary for employees, accounting for debts and liabilities and maintenance of employers records.

iii) Budgets: Budget construction involves a lot of formulae and calculations. The use of electronic spread sheets facilitates this task by making it easy and time saving.

ICT in financial management can be used in general accounting, payroll, inventories, budgeting investment (Ouma, 1994). He further asserts that, there are ceilings that each departmental head must observe when purchasing items for the department and these information can be made aware to this heads through the computers so that the H.O.Ds have access to the finance data base in order to know how much of their allocations are remaining for them not to over commit the departments’ share. The adoption of an accounting system would include modules such as: Invoicing, bought ledger (trade creditors), sales ledger (trade debtors), bank reconciliation, cash flow forecasts and producing draft accounts and trial balances. Spreadsheets are widely used by finance departments to help manage cash flow, for bank reconciliations and in credit control. Any department holding a budget for expenses and/or revenues would typically use a

spreadsheet to help create the budget in the first place, and then to monitor incomes and expenditure and any variances (Wims & Lawler, 2007)

The use of Computerized credit control Module is highly recommended for use in organizations. (NEIS, 2010). As businesses typically buy from and sell to other businesses on credit terms, it is essential to have up to date and accurate information about which creditors need to be paid, and when money is due from debtors. Businesses are able to take advantage of electronic banking which allows them to check their bank account records in real time – saving time and helping ensure that payments due have been made and received, and also to operate the bank account within any agreed overdraft limit. Large and overseas payments can be made quickly and securely with on-line banking, as long as the business has its own security checks to protect against theft by staff or by anyone else who managed to obtain account details and passwords. (Karsenti & Larose 2001). Electronic Funds Transfer at Point Of Sale (EFTPOS) is familiar in the form of card readers that swipe credit and debit cards for payments. This has the advantage of avoiding the expense and risk of handling cash and in generally a much more efficient payment method. Again, even quite small businesses are now using this technology, and portable EFTPOS devices have made it feasible to use in places many business places. It develops and operate a school accounting system that guarantees autonomy and transparency at elementary and secondary schools (Wims & Lawler, 2007). The interest of the present study is to analyze the use of ICT in secondary schools in Bungoma East so as to assess the level to which is embraced in financial administration in the schools.

A study on the financial management in the Ghana education service (GES), with reference to adoption of ICT in the public sector, revealed that much as the administrator appreciated the

benefits of ICT in financial management, the technology was very lowly applied in connection with electronic funds transfer services and electronic banking (Gyaase et al. 2013). The study in Ghana was administered on 10 account officers and 15 Quality Assurance officers, leaving out the school principals. This gap is rather odd as there is substantial literature relating to school effectiveness, school improvement and change, which identifies institution principals as a key factor in bringing about successful changes in institutions (Ddungu, 2006). The present study sought to fill this gap.

Mue (2006) carried out a study on application of information communication technology in school administration in public secondary schools in Lang'ata Division, Nairobi county, Kenya. The objectives of the study sought to examine: the extent to which school administrators apply ICT in human resources administration, physical resources, in financial administration, and challenges facing administrators in application of ICT in school administration. A survey research design was used. Simple random sampling and purposive sampling procedures were used to arrive at the sample (Students, computer teachers, and principal. In total the sample size was one hundred and thirty (n=130). The study concluded that most of the public secondary schools in Lang'ata have embraced ICT in the administration of human resources but its use in financial administration is so limited. This is mainly because they only apply it in the collection of school fees and salary payment. Much as Mue's study had a lot of similarities with the present study, in terms of objectives and research design, it did not put into consideration the fact that school bursars and accounts clerks are also central administrators in the school finances, hence their views were not included in the study, a gap the present study seeks to fill. The use of saturated method of selection and the higher number of respondents (216) in the present study as

compared to one thirty (130) in the Mue's study, also makes the results of the present study more representative.

2.4 Use of ICT in Monitoring and Evaluation

Monitoring and evaluation is a very vital aspect of administration in every organization. It is on the basis of the same that decisions about the running of the organization are made (Daisy, 2009). Decision to transfer, promote, retire or terminate an employee results from monitoring and evaluation. Attendance levels are a measure of performance. Some organizations pay bonuses direct to employees on the basis of their attendance records. Employees with unacceptable absence levels would not be put for promotion. Absence record is considered as an indication of either reliability or unreliability. Monitoring and evaluation should be carried out analytically, fairly, systematically, consistently, transparently and objectively. One of the ways to ensure this is to computerize job evaluation to a greater lesser degree (Amstrong, 2005)

Some organizations have resorted to the use of Electronic Surveillance devices to monitor employees. In industries like telecommunications, banking and insurance, as many as 80% of the employees are subjected to some form of electronic monitoring. To eves drop an employee, companies use hidden microphones and transmitters attached to telephones and tiny fish eye video lenses installed behind pin holes in walls and ceilings. Some have access to employees' computer files, voice mail, electronic mail or other networking communication to monitor work flow or to investigate espionage (Jefkins, 1998).

The increased sophistication of computer and telephone technology now makes it possible for employers to track employees' performance. Video monitoring cameras are also used in some instances to track those who steal time through playing video games or visiting pornographic

websites. Turner Broadcast Systems, a unit of Time Warner Inc. use special software that monitors every web page a worker visits and helps pin point any one wasting company time on-line. The company started monitoring on-line activities when it noticed substantial increases in overtime pay expenditures because some employees were wasting time browsing websites with their computer. Turner does not pay overtime to employees who are caught surfing the web on company time. The same kind of monitoring was extended to Turner Private School where electronic cameras were installed in classrooms to monitor performance (Jefkins, 1998).

In Australia, all elementary and secondary schools principals in the coastal hunter region of New South Wales were studied in terms of their use of and concerns about ICT. Descriptive survey design was used. Findings indicated that although most principals in the region are over age 40 and have been principals for more than six years, there are marked variations in their perceived competencies and use of ICT in monitoring and evaluation. Interviews with selected elementary principals indicated greater familiarity with administrative uses of ICT than teaching and training applications (Schiller 2002). It was important to find out if the situation was the same in Bungoma East Sub County. Furthermore, while the study in Australia concentrated on school principals alone, the present study looked at a wider perspective by including the H.O.Ds and account clerks. This is the gap that this study tried to fill.

In Kenya, Ayere (2008) did a study; comparison of ICT application in NEPAD and NON-NEPAD schools she found that, NEPAD schools had embraced use of ICT in monitoring and evaluation, enforcing policies like monitoring teaching loads, monitoring the performance of income generating venture in terms of profit and losses incurred. Such information was to help in implementing agreed policies in the sense that corrective action can be taken at a very short

notice to ensure that the policies are maintained. ICT gadgets were used to monitor performance indicators like staff load, staff-student ratio and so on for the purpose of making formative and summative decisions

2.5 Use of ICT in Fostering Public Relations

Public relations (PR) refer to efforts to establish and maintain a favorable image with the public. It is a form of communication that is primarily directed towards gaining public understanding and acceptance. PR is used to build relationship or a rapport with the various publics that an organization may. This could be the employees, customers, stockholders, competitors or the general public. Public relation activities could be like: publicity releases, employee training, seminars, financial public relations that is concerned with corporate annual reports, speaking at conferences, working with the press, employee communication, cooperate communication with the analysts, media, investors, labour relations and so on. In order to establish and support standard operating procedures and routines, leaders use ICT to connect schools to each other, to education systems and communities so as to engage them in school governance, management and decision making. They develop a culture and process of knowledge exchange and planning based innovation, evidence and information. It also provides professional learning and connects staff to external professional expertise and experienced administration, to prioritize strategic planning and transparent governance (Karsenti & Larose, 2001) ICT also creates optimum educational circumstances connecting families and schools with the “, Let’s Know Our Children Better” program (NEIS, 2010).

Technology has penetrated the sector of Public Relations in various ways (Frank, 2011). Sending press releases has become much easier with [e-mail](#). With a few simple mouse clicks, a public relations specialist or an administrator can send tens or thousands of messages to a targeted group. Another advance in PR technology is the Web itself. By building a well-designed Web site, an institution, company, individual or organization can share information that polishes its image and furthers its agenda. Web sites are also an excellent way to get the right information to journalists and to the public, or stake holders in a school situation. Most large organizations and businesses include a media room on their official Web site. This area of the site is used to publish all press releases, company history, executive bios, high-resolution digital photos and even downloadable, digital press kits. Rather than seeking out media attention through mass-e-mailed press releases, a good Web site will draw in customers by itself. One of the biggest PR challenges posed by technology is the explosion of social media, sometimes called Web 2.0. Social media includes social networking Web sites like Facebook, Twitter and MySpace, and user-generated content communities like YouTube. There now exists an entire generation of young people who have grown up online. . They're used to searching for all their information online and are distrustful of "official" opinions. Solis (2011) recommends that organizations invest more in community managers, people in charge of tracking and managing a client's image online. These community managers scour company message boards, read industry blogs and most importantly, communicate with the public on behalf of the company. Yet another danger of the online era is the ability of a negative news story to spin out of control in a matter of hours, rather than days. Blogs pick up bad press and instantly amplify it to the world.

Mue's (2006) study on application of information communication technology in school administration in public secondary schools in Lang'ata Division, Nairobi county, Kenya. The objectives of the study sought to examine: the extent to which school administrators apply ICT in human resources administration, the application of ICT in administration of physical resources, the extent to which school administrators apply ICT in financial administration and challenges facing administrators in application of ICT in school administration. The study concluded that most of the public secondary schools in Lang'ata have embraced ICT in monitoring attendances, performance, staff training and recruiting of the staff. Much as Mue's study had a lot of similarities with the present study, it did not put into consideration the aspect of ICT use in Public relation. This is the knowledge gap this study sought to fill.

Ambuko (2008) carried out a study on selection and use of media in teaching Kiswahili in secondary schools in Emuhaya District. The core specific objectives were to find out the teachers preparedness in the selection and use of media, to determine the range of media selected and used. In the study, 20 head teachers, 20 Kiswahili teachers and 400 students were selected through saturated, purposive, and simple random sampling respectively. Data was selected by use of questionnaire, document analysis guide and observation schedule. Descriptive statistics were used to analyze data. The study showed that there was inadequate selection and use of media in teaching of Kiswahili. Much as the present study agrees with this study over use of media in secondary schools, and on the method of data analysis, the two studies differed on several base lines. The present study's purpose was to analyze the use of ICT (where media is included) in the administration of schools rather than the instructional sector. The interest was to find out whether media resources like newspapers, mobile and landline phones, television,

internet, fax machines and so on were being used to enhance school management and PR. While Ambuko's area of study was Emuhaya District, the present study looked at Bungoma East Sub county. This the gap that this study attempted to fill.

2.6 Challenges Faced by School Administrators in the Use of ICT in Schools

Gray and Smith (2007) observe that the twenty-first century principal administrator faces numerous challenges emanating from the technology. Amutabi, (2004) postulates that the impact of technology has been slow and sporadic because of a number of challenges which African nations face. The failure by African countries to recognize and exploit development potentials and opportunities of the information and technological revolution could seriously undermine capacities of these countries to embark on sustainable social economic development efforts in the emerging age. However, research evidence on ICT integration in school administration processes is scanty (PanAf, 2006:13). Baylor and Ritchie (2002), argue that regardless of the amount of technology and its sophistication, technology will not be used unless faculty members have the skills, knowledge and attitudes necessary to infuse it into the curriculum. This is supported by Gakuu (2006) who found no significant difference in University lecturers' attitude towards adoption of ICT among disciplines and that the adoption rate would be enhanced if the lecturers' issues of concern were addressed. Karsenti and Larose (2001) also observed that a major obstacle to adequate use of technology across all grade levels and the curriculum is the lack of a critical mass of teachers who feel comfortable in using technology.

Konyana (2009) undertook a study in schools of Chipinge District in Zimbabwe. Using teachers and five heads of departments selected through stratified and purposive sampling techniques, the study investigated the challenges and opportunities facing curriculum computerization of rural

schools in Zimbabwe. The study contends that most rural schools that received donated computers had not been capacitated to fully utilize the new technology for the benefit of students, teachers and the community. As a result, most of the gadgets have been lying idle in classrooms due to lack of either proper infrastructural facilities such as computer laboratories and electricity as well as lack of trained ICT teachers. Konyana's study which was biased towards curriculum implementation, involved rural schools in Zimbabwe, Challenges that were explored were also biased towards pedagogy implementation. The interest of the present study was to establish challenges administrators in both rural and urban schools in Bungoma East Sub County.

The study by Ajayi and Ekundayo (2002) examined the application of ICT in Nigerian secondary schools. It investigated the level of availability of ICT facilities and problems of its use. Descriptive survey design was used and the population entailed all teachers and principals of the secondary schools in Ado and Ekiti estates. A sample of 320 teachers and 40 principals was randomly selected. Questionnaires were used for data collection as well as descriptive statistics for analysis. The results showed that the integration was a problem because ICT facilities were lacking. The study identified that challenges facing computer use in schools in Nigeria included: Irregular supply of power, inadequate computers, illiterate teachers in computer use and high costs of purchasing the equipment. Much as there was a lot in common between the study in Nigeria and the present study, the two differed in terms of sample size and instruments of data collection because the present study used checklist in addition to the questionnaires used by the study in Nigerian. The present study also went further to involve the H.O.Ds and account officers unlike the Nigerian study that concentrated on principals and teachers.

A study by Unachukwu and Nwankwo (2009) on principals' readiness for the use ICT in school administration in Anambra state of Nigeria, observed that, most of the people made principals of secondary schools in the state shy away from the use of computer. Some of them claim that innovation is for the new age, yet there were reports of administrative problems in the schools. Some of these problems would have not been there if ICT was employed in school management by the principals. Proportionately stratified random sampling technique was used in selecting the sample of the study. Findings revealed among others that, majority of the secondary school principals were not ready for the use ICT in school administration. Ddungu 's research at Gayaza high school, Uganda indicated that teacher's negative attitude, power fluctuations and lack of technical experts were some of the challenges that the school faced in implementing computers use in school instructional and administrative sector.

In their study of secondary schools in Kenya, Wims and Lawler (2007) found that educational software, lack of Internet access and e-mail were lacking in schools. At the same time, 35-40% of secondary school teachers had never used a computer. They recommend staff training, mainstreaming of ICT across the curriculum and provision of adequate ICT equipment as ways of enhancing integration of ICT in curriculum delivery. Odera (1996) carried out a study on the use of school radio programs in Nyanza Province of Western Kenya. Among the challenges he established were the high financial implications of acquiring ICT materials and interference with media waves and that some schools in poor reception areas experience difficulties in reception. The present study aimed at identifying if administrators encountered similar or different problems in their efforts to use ICT in the secondary schools in Bungoma East Sub county.

Bonareri (2013) studied the influence of principals' characteristics on integration of information technology in management of human resource in Nyamira county, Kenya. The study sought to establish the influence of principals' exposure to training in ICT, to establish the principals' level of education and to determine the influence the principals' age and the influence of gender on ICT integration. The theory that was used was the systems theory. Stratified proportionate sampling was used. The study revealed that principals' exposure and Teachers' level of education showed inconsistency patterns between teachers level of education and ICT usage. Gender and age also showed consistency; where age bracket 30-49 years showed high percentage that principals integrate ICT than 50-60 years who had received their training before the introduction of ICT in the syllabus. The study discovered that many of the teachers went through schooling before the introduction of ICT in Kenyan. These posed a big challenge of lack of skills and interest. Other challenges identified in the study were; inadequate facilities 29.6 percent, computer breakdown 14.8 percent, inadequate funds 14.8 percent. The study recommends that school principals should mobilize resources to increase the number of computers in schools and should train teachers on ICT, that computer labs should be constructed. More, the study suggests that teachers should change their attitude towards the use and integration of ICT in all aspects of administration, teaching and learning in institutions so as to achieve their development vision. Skill sets in the school systems are very low. The need of training of school managers and teachers is widely recognized.

According to the study by Kukali (2014) on Opportunities and Challenges for Use and Integration of Information Communication Technology in Management of Public Secondary Schools in Bungoma South District, whose specific objectives were to establish challenges faced in use and integration of ICT in management and find out available opportunities for use and

integration of ICT in management. The study findings established that schools that used and integrated ICT in management were major beneficiaries of donors such as the Ministry of Education and the Constituency Development Fund computer project. It also established that the highest number of respondents reported insufficient funds and facilities as the major challenges.

The studies stated above were narrow in their outlook. The Bonareri study (2013) concentrated on challenges encountered in human resources management, while the Kukali study (2013) looked at general challenges without attaching them to specific fields. This study sought to fill the gap by finding out challenges encountered in four specific areas; human resources, financial management, monitoring and evaluation and public relations in secondary schools in Bungoma East Sub county,

CHAPTER THREE

RESEARCH METHODOLOGY

3.1 Introduction

This section outlines the procedure and methods the researcher employed in order to obtain data needed for the study. It comprises of the description of the area of study, the research design, study population, the sample and sampling techniques, instruments for data collection, data collection procedures and methods of data analysis.

3.2 Research Design

Fraenkell and Wallen (2009) define descriptive survey research design as a type where opinions of a large group of people about a particular topic or issue is obtained by asking a number of questions all related to the issue in order to find out answers. Borg (1981) postulates that a survey study is a descriptive form of research that is concerned with collecting data about the occurrence or incidence of events or instances in varying situations and circumstances in order to determine the opinions, attitudes preferences and perceptions of persons of interest to the researcher. The design was useful in the development of data gathering tools. The design was appropriate for this study as it allowed the researcher to gather a lot of detailed information within a short time hence allowing the study to be done within the specified time frame.

3.3 Area of Study

The study was conducted in Bungoma East Sub County. The sub county is found between Longitudes 34⁰34'00'' to 34⁰ 51'30''E and Latitudes 0⁰ 23' 00 to 0⁰ 53.2' N. It is divided into two administrative divisions, which are Misikhu and Ndivisi locations. It is bordered by Bungoma North, Bungoma South, Bungoma Central and Lugari Sub counties. The agricultural

and rural development sectors stimulates growth in all the other sectors and supplement their efforts in reducing poverty through increased income generation. It generates income mainly through cash crops such as maize, sugarcane, and coffee. Livestock is also kept. Three quarter of the population leaves below poverty line, (Population Statistics, 2009). The cultural activities of residents include circumcision ceremonies where a lot of local brew is made and taken. Although twenty (43%) of the schools in Bungoma East Sub county have automated some of their functions, there have been inefficiency based demotions among Principals of secondary schools in the sub county. it is therefore not clear whether the technology is effectively used in the sector of administration in this sub county. This justifies the study.

3.4 Study Population

The study population consisted of 20 Principals, 200 H.O.Ds and 20 Accounts Clerks in 20 secondary schools in Bungoma East Sub County. The schools selected were those which used computers for administration.

3.5 Sample and Sampling Techniques

As Mugenda and Mugenda (2003) pointed out, an effective sample should be diverse, representative, accessible and knowledgeable on the topic being investigated. This is because a sample is a finite part of a statistical population whose properties are studied to gain information about the whole. Simple random sampling technique was also used to select the pilot sample of two principals, 20 H.O.Ds and two account clerks who were not involved in the final study. Saturated sampling technique was used to select the actual study sample of 18 principals, 180 heads of departments and 18 account clerks. Fraenkel and Wallen (2009) argue that, the bigger

the sample, the smaller the standard error and the bigger the degree of reliability. The sample frame is illustrated in Table 3.1

Table 3.1

Sample Frame

Category of Respondents	Total Population (N)	Sample (n)	(Percentage %)
Principals	20	18	100
H.O.Ds	200	180	100
Accounts Clerks	20	18	100

3.6 Instruments for Data Collection

Data for the study were collected by means of questionnaires, interview and observation schedule. Questionnaires were prepared for principals, H.O.Ds and accounts clerks. The questionnaires consisted of both open and closed ended questions. The selection of the questionnaire tool was appropriate for this study as Mugenda & Mugenda (1999) assert, questionnaires are ideal for data collection because they can be formulated to address specific objectives in the study. Any deficiency will be revealed in pre-testing. It is possible to reach distant subjects by either posting the questionnaire or delivering it to them personally. Questionnaires were found appropriate due to the above reasons. Interview schedule was administered to the school principals only. Interviews provided in-depth data that was not possible to get using questionnaires. Interviewer also clarified questions that were not clear in the questionnaire. The researcher preferred to use to use this instrument because it provides a free environment to the respondents to express themselves and even give additional information

which could not be catered for in the questionnaire, (Fraenkel and Wallen, 2009). Observation schedule was used to collect data on the ICT gadgets that were available in the schools and the number that had been put into use. This was useful because it could help to solicit more information on the set objectives.

3.6.1 Principals' Questionnaire (PQ)

The principals' questionnaire was used to collect data on how principals had embraced the use of ICT in their administration in regard to human resource management, financial administration, monitoring and evaluation, and public relations. PQ is attached as Appendix A.

3.6.2 H.O.Ds' Questionnaire (H.O.DQ)

H.ODs were subjected to questionnaires because they are the implementers of curriculum through providing leadership to department members therefore they are in a better position to know how ICT is embraced in the school administration. The questionnaires sought the views of H.O.Ds on how ICT was used in their institution for administration purposes in the areas of human resource, monitoring and evaluation and in public relations. It also sort to find out challenges encountered in the process of using ICT in administration of the schools. Questionnaires were administered to H.O.Ds in charge of various departments in the schools including all academic departments, boarding, clubs and societies and co-curricular department. The H.O.D Q is attached as Appendix B.

3.6.3 Accounts Clerks' Questionnaire (ACQ)

This questionnaire was used to get views of the accounting officers on how they had embraced the use of ICT in the administration of finances and the challenges that were encountered in the schools in the use of this technology. The ACQ is attached as Appendix C.

3.6.4 Principals' Interview Schedule (PIS)

This instrument was administered to principals only. It was a face to face interview used to get clarification on issues which needed probing as well as enabled the researcher to get gauge the accuracy and genuineness of the responses (Fraenkel & Wallen, 2009). It was used to probe on issues relating to opinion on how ICT was used in their school administration and the hitches they faced by its use. A few guiding questions were used to conduct in-depth interviews (Appendix D).

3.6.5 Observation Schedule (OS)

It consisted of a number of gadgets whose availability and functionality in the schools was checked to ascertain whether the school had put ICT in use. The observation schedule is attached as Appendix E.

3.7 Validity of Instruments

For validity to be ensured, research instruments were presented to experts at Maseno University in the area of educational administration for examination and scrutiny so as to assess the face validity. Suggestions made by the supervisors and experts were used to revise the instruments before preparing the final copy.

3.8 Reliability of Instruments

Reliability refers to dependability and validity refers to soundness. Fraenkel and Wallen (2009) explain that reliability is the extent to which we obtain information that is free of measurement error while validity refers to the degree of relevance of the instrument. Reliability of the instruments was determined by piloting in two schools which did not form part of the actual study. This represented 10 percent of the study population. Thomas and Nelson (1996) recommend this percentage rate for piloting. The test-retest method was used to test reliability of the instruments. The instruments were administered twice within an interval of two weeks. Questionnaires were given to respondents to fill and after two weeks, respondents were given again the same questionnaires and their responses in the two sets of questionnaires were co-related. The instruments generated the following Pearson's Moment Correlation Coefficient at a p-value of 0.05; Principals Questionnaire (PQ), $r=0.7$, H.O.Ds Questionnaire (H.O.DQ), $r=0.74$, Account Clerks Questionnaire (ACQ) $r=0.72$. the instruments were judged as reliable when they were consistent with attaining a Pearson's Product Moment Correlation Coefficient of >0.7 at P-value of 0.05 (Fraenkel & Wallen 2009). The instruments were corrected as per the results of the pilot study. Improved versions of instruments were prepared so that only items considered relevant to the study were taken and modified to suit the purpose of the study.

3.9 Data Collection Procedures

Upon approval of the research by the School of Graduate Studies, Maseno University, the researcher then personally informed the DEO of Bungoma East Sub-county of the intended research, after which the researcher visited each of the sampled schools to make appointments, before the actual day of the study. The researcher personally visited each of sampled schools and administered the questionnaire by distributing them to the respondents through the authorities of

the schools concerned, the researcher was present to clarify the points of difficulty. The researcher collected the questionnaires at the end of the session. An appointment was made for interviews with the individual principals. They were face to face in-depth interviews where the researcher asked the principals a set of open questions. Responses from principals were written down by the researcher. Respondents were probed on matters to do with the use of ICT in administration of their schools. A total of 18 principals were subjected to an interview lasting 20 minutes each. Researcher also used observation schedule to record the ICT equipment that were available and those that had been put into administrative use in the schools. This was done by observing, testing and probing about how the gadgets observed were used administratively. The researcher sought permission from heads of the schools visited before checking the state of facilities and other ICT related services.

3.10 Methods of Data Analysis

Quantitative data collected through questionnaires were analyzed by use of frequencies and percentages, as Fraenkel and Wallen (2009) have asserted, frequencies are used to enable the researcher to come up with clear counts concerning the responses. Responses to the open ended questions, which formed the qualitative data, was organized, categorized and reported in emergent themes and sub themes. Data collected through questionnaires was grouped according to the research questions.

Data were based on the opinions scale. Respondents were required to choose one appropriate response from the statements; Agree (A), Undecided (UD), disagree (D). Items given either implied positive or negative attitudes. For the purpose of scoring, responses were quantified into percentages basing on their frequencies. On a few other items, respondents were required to

choose one appropriate response from the statements 1=Always, 2=Rarely 3= Never. These responses implied how frequently the ICT item was embraced in school administration. The choice of “Always” showed high use, “Rarely” showed moderate use while “Never” implied no use at all. On other few items, respondents were to answer by choosing “Yes” or “No”. The scores given either implied agreeing or disagreeing with the item given.

The frequency and functionality of gadgets on the checklist were tallied; frequency counts were made and converted into percentages. The descriptive analysis was appropriate for this study because it involved the description, analysis and interpretation of circumstances prevailing at the time of study. The summary of data analysis matrix is as shown in Table 3.2

Table 3.2

Data Analysis Matrix

Objective	Statistical Tools
Establish the use of ICT in human resource management in the schools	Descriptive statistics- Frequency counts and percentages
Examine the use of ICT in financial administration of the schools	Descriptive statistics- Frequency counts and percentages
Establish the use of ICT in monitoring and evaluation of programmes in the schools	Descriptive statistics- Frequency counts and percentages
Establish the use of ICT in public relations in the secondary schools	Descriptive statistics- Frequency counts and percentages
Establish challenges encountered by administrators in the use of ICT in the secondary schools’ administration	Descriptive statistics- Frequency counts and percentages

3.11 Ethical Considerations

The consent of respondents to participate in this study was sought by informing them of the researchers' identity, the purpose of research and assurance of maintaining confidentiality and anonymity. This was done in order to evoke the participant's voluntary participation. It was done by not putting the identity part on the questionnaire for anonymity purposes and it ensured confidentiality by not exposing participant's views identified with a particular participant to the public (Babbie, 2007). According to Crewswell (2014) a researcher should avoid causing psychological harm to respondents by asking irrelevant questions using bad language or making them uneasy. The researcher in this case did not ask questions that were likely to cause embarrassment to the respondents.

CHAPTER FOUR

RESULTS AND DISCUSSION

4.1 Introduction

This chapter contains information on findings of the research that purposed to analyze the use of ICT in administration of secondary schools in Bungoma East Sub County. The results are organized as per themes from the objectives of the study. Questionnaires were distributed to 216 respondents and all were collected back after filling, therefore there was 216 (100%) return rate. In discussing results, reference was made to literature reviewed in chapter two.

4.2 Background Information

Background information included the data of number of personnel and computers in the schools and in each department.

4.2.1 Data on Number of Personnel and Computers in the secondary Schools

Principals were asked to indicate the number of personnel in their schools. They were also asked to state the number of computers that were in the schools. The purpose of this was to gauge the adequacy of the computers as a resource in relation to the numbers of personnel in the institutions. Results showed that the total population of personnel in the secondary schools was 11740. This comprised of 540 teachers, 400 support staff

members and 10, 880 students. The total number of computers in the schools was 293. These were to be used against a staff of 11740 because it was necessary for all members of the school to have access to the same. The total number of computers was divided by the total population to get the ratio of distribution among the school community members and results showed that, the average ratio was 40.06 people per one computer; ideally, this confirms a serious inefficiency of this important facility. It indicates that efficiency of school administrative work was likely to be affected or slowed down owing to the insufficient number of computers, the bulk of the work that depends on computer use including financial processing and exam analysis must have slowed down, leading to delay and therefore affecting efficiency. The fact that time was not saved went against the element of time saving that the Scientific Management Theory of Fredrick Taylor advocated for. Results of this study concur with that of other studies; Ajayi & Ekundayo (2002), Effiom-Edem (2006). Ddungu (2006), Bonareri (2013), and Unachukwu and Nwankwo (2009) which established that insufficiency of computers and other ICT related facilities posed a great barrier to its implementation.

4.2.2 Number of Personnel, Computer in Each Department

H.O.Ds were asked to indicate the number of personnel in their departments. They were also asked to indicate the number of computers in their departments. The aim was to find

out the distribution of computers in departments and the ratio of distribution between departments. Results are as indicated in Table 4.1

Table 4.1

Number of Personnel in the Departments Against the Number of Computers

Department	L	S	H	M	CA	D.O.S	G/C	C	T/S	B
Number of teachers	126	84	308	112	46	54	90	117	26	72
No. of computers	8	2	6	28	0	38	4	240	4	6
Ratio per computer	0.06	0.024	0.02	0.25	0	0.70	0.04	0.02	0.15	0.08

Source: Field Work Data (2014)

Key:

L - Languages S- Science H- Humanities M- Math CA- Creative Arts D.O.S- Director of Studies G/C – Guidance and Counseling C- computer TS- Technical Studies B- Boarding

From the results in Table 4.1, it is clear that there was un-even distribution of computers in all departments in secondary schools in Bungoma East Sub County, with some departments having an average number and others having none. The administrative department with highest number of computers was that of Director of Studies (also known as the exam office or Curriculum office) which had 38 computers against 54

members. This averagely gave a ratio of 0.7:1, followed by Math department at the ratio of 0.25: 1. The office of the Director of Studies was the most favored because it was argued that all academic records of all students were stored and monitored from this department and that computing of academic marks resulting from exams done was very hectic; it needed the aid of computer packages like Ms Excel, word, SPSS exetra. This emerged from the interviews conducted on Principals. None of the Creative Art departments had a single computer. In most schools, computers were stored and used in computer laboratory for instructional purposes but not for direct administrative use.

Furthermore, computers were un-evenly distributed in schools with 8 out of the 18 schools having just 2 computers that were restricted to the office of the principal. The statistics reveal a very high shortage of computers in secondary schools in Bungoma East Sub County. The implication of this is that efficiency was compromised in most departments because work could not be done fast enough and with the accuracy required hence affecting school administration. The un-even distribution of computers in departments and in secondary schools meant that, there were members of the schools that had more access to facilities than other members in the same institution or in the same sub county. Such gave an advantage to a few members and disadvantaged the rest. Glenn (2007) points out that there is need to have even distribution of ICT facilities in learning

institutions for there to be equal access. The Kenyan education policy in line with the Millenium Development Goals and Education For All, advocates for equity and access of education to all (Republic of Kenya, 2005) and there will be no equity and access if distribution of resources in schools remain un-even.

4.3 Administrative Use of ICT in Human Resource Management in Secondary

Schools

The first objective of the study was to examine the use of ICT in Human Resource Management in secondary schools in Bungoma East Sub County. Questionnaires were administered to Principals and H.O.Ds of secondary schools in the sub county that had embraced use of computers. Questions were constructed basing on elements of Human Resource Management namely: planning, advertisement, recruitment, selection, enrolment, admission, placement, induction, communication, staff development, appraisal and motivation. An interview schedule was also conducted on Principals for the purpose of getting clarification on issues stated in the questionnaire.

4.3.1 Use of ICT in Planning of Activities for Human Resource in Secondary Schools

Respondents were asked to indicate their opinion about ICT use in enlisted areas of planning of administrative activities.

4.3.1.1 Principals' Responses on Use of ICT in planning of Activities for Human Resource in Secondary Schools

Results for the Principals' responses on use of ICT in planning of activities of human resources were as indicated in Table 4.2.

Table 4.2

Principals' Responses on Use of ICT in planning of Activities for Human Resources in Secondary Schools

ICT use in planning	Agree		Undecided		Disagree	
	F	%	F	%	F	%
Mobile phones used in coordination	15	83.34	0	0	3	16.66
Word processing and storage of data	18	100	0	0	0	0
Use of computer programs like Excel in budget preparation.	16	88.88	0	0	2	11.11
Use of e-time tabling module	0	0	0	0	18	100
E- conferencing	0	0	0	0	18	100

Source: Field Work Data (2014)

From findings in Table 4.2, it was clear that mobile phones were used to coordinate school activities with both internal and external stake holders; this was indicated by 15(83.34%) Principals while 3(16.66%) disagreed with this view. Interviews conducted on the principals revealed that stake holders were either rang to or send short messages (SMS) of invitation to different occasions and activities like staff meetings, school seminars, Parents' Days and so on. This was to reinforce other forms of communications like printed notices which not every one of them could access. The findings were in

support of the views of Sheng, Nah and Siau (2005) who asserted that ICT communication has the intangible impact of improved coordination and improved sharing of information. Interviews on principals revealed that schools under study had official school mobile phones on which all stake holders could communicate. The mobile phone numbers were always indicated in the newsletters and parents were always reminded of this numbers as they visited the schools. Mobile phone numbers were also pasted on notice boards in the schools for the public to access. Use of mobile phone for communication in secondary schools had improved the ease of sharing information without spending much time and money. This was according the responses of principals during the interview. Just as it has been asserted by Ddungu (2006), use of mobile phones fastens communication of vital information.

Findings showed that all, 18(100%) Principals reported that computer use was embraced in electronic word processing, storage and administration of staff and student's data, to plan for the school activities. This was through processing letters and other informative documents using computers after which they were printed and photocopied. This document, together with the staff profile information that was stored on computers was used to plan and decide on their job development. Information stored included details on background of the staff, educational and professional performance, promotions, transfers

and disciplinary actions. Students' details that included contacts, education and health history, plus their background information were also stored on computers. This was revealed from principals' interview. The findings concur with results of other studies; Make (2008), Ddungu (2006) and Avison (2003), which established that computers were very vital gadgets of storage of organized information for efficient decision making in planning. Principles applauded this system stating that it enabled them to get information on employees quickly and easily hence making administration less stressful. In the interview, one Principal stated;

“The module used in this school is called ‘HRMM’ in short. Meaning, Human Resource Management Module. This Module entails all details about employees’ personal data, formal education, professional data, and promotion records. It also shows the record of absence and disciplinary measures taken against any contravention of the school or employers laws and rules. The module has been updated to cater for students and have provision to keep updating the existing data as new data emerges. I find it so easy to trace the history of academic and disciplinary performance of our students here. All we do is to feed in the Admission number and every information comes on the screen. Gone are the strenuous days of perusing through paper files to put together pieces of scattered information”

Sixteen (88.88%) Principals indicated use of computer programs like excel in preparing budgets; this, according to Ddungu (2006), enhanced efficiency of finance officers, work. All this pointed to the fact that, office automation that involved application of integrated computer communication and office technologies had been done to support a variety of

functions in the school. Only 2(11.11%) Principals disagreed with this view. The findings were in line with those of the study done in schools in India which revealed that computers were used to construct financial budgets (Computer '2009). None of the respondents was undecided over use of computers in budget preparation.

None of the respondents reported that the schools embraced computer conferencing. This could be attributed to the shortage of necessary infrastructure. Absence of computer conferencing goes against the affirmation given by Jefkins (1998) that for good and faster planning, computer conferencing in institutions and organizations is necessary. The results gave a clear picture of the narrow use of internet in the schools' planning and general administration. None of the Principals indicated that schools had a special software installed in their computers for preparation of timetables. The fact that computer conferencing and e-timetabling were not embraced in the schools in the sub county, implied that time, accuracy and efficiency were compromised. This went against the views of Scientific Management Theory on whose principle and elements, the present study is based. There is therefore need to prioritize these aspects of ICT based planning in schools in Bungoma East Sub County.

4.3.1.2 H.O.Ds' Responses on Use of ICT in planning of Activities for Human

Resource in Secondary Schools

H.O.Ds were asked to indicate their opinion about the enlisted use of ICT in planning activities in secondary schools. Results were as indicated in Table 4.3.

Table 4.3

H.O.Ds' Responses on Use of ICT in Planning of Activities for

Human Resource in Secondary Schools

ICT use in planning	Agree		Undecided		Disagree	
	F	%	F	%	F	%
Use of Mobile phones in coordination	154	85.55	0	0	26	14.45
Word processing and storage of data	180	100	0	0	0	0
Use of calculators and computer in budget preparation.	160	88.88	0	0	20	11.11
Use of e-time tabling module	0	0	0	0	80	100
E- conferencing	0	0	0	0	180	100

From findings in Table 4.3, it emerged that mobile phones were used to coordinate school activities, this was indicated by 154(85.55%) H.O.Ds while 26(18%) of them disagreed

with this view. None of them was undecided over this issue. 180(100%) H.O.Ds reported that computer use was embraced in electronic word processing, storage and administration of staff and student's data, to plan for the school activities. The findings concur with results of other studies; Make (2008), Ddungu (2006) and Avison (2003) which established that computers were very vital gadgets of storage of organized information for efficient decision making in planning, 160(88.88%) H.O.Ds indicated use of computer programs like excel and calculators in preparing budgets. Only 20(11.11%) H.O.Ds disagreed with this view. None of the respondents was undecided over use of calculators and computers in budget preparation. According to the H.O.Ds' responses, none of the schools embraced computer conferencing and e-timetabling. This was an indication that ICT was narrowly used in planning of activities in secondary schools in Bungoma East Sub County. The researcher therefore calls upon stake holders in the secondary school to make an effort and expand the use of ICT in planning in the schools.

4.3.2 Use of ICT in Advertisement, Recruitment and Selection of Personnel in

Secondary Schools

Respondents comprised of principals and H.O.Ds. Respondents were asked to give their opinion about enlisted items that denoted use of ICT in advertisement, recruitment and selection of personnel in secondary schools.

4.3.2.1 Principals' Responses on Use of ICT in Advertisement, Recruitment and

Selection of Personnel:

Responses of the Principals on the enlisted items of advertisement, recruitment and selection of personnel were as shown in Table 4.4.

Table 4.4

Principals' Responses on Use of ICT in Advertisement, Recruitment and Selection of Personnel

Use in Advertisement and Selection	Agree		Undecided		Disagree	
	F	%	F	%	F	%
Internet advertisement of vacancies	0	0	0	0	18	100
Internet recruitment	0	0	0	0	18	100
Checking computer literacy of interviewee	2	11.11	0	0	16	88.88

Results in table 4.4 show that internet advertisements of vacant positions were not done. Internet recruitment was also not embraced in all the schools under study, this was confirmed by 18(100%) Principals. Interviews on principals sited high costs of processing as a hindrance to use of ICT based modes of advertisement and recruitment. These points to the fact that ICT was minimally used in advertisement and recruitment,

consequently, there was a possibility that the scope from which schools could choose employees was limited to the local environment. This possibly denied schools the opportunity of widening its scope of tapping skills and knowledge to a wider scale so as to get the best. Such wide scope could be found if schools embraced internet advertisement. Earlier researchers mentioned in the literature review are silent on embracement of ICT in advertisement and recruitment of staff but Kwaku (2004) affirms that ICT use is very vital in advertisement and recruitment of staff because it enables the prospective employer to tap skills from a wider area. Absence of internet advertisement and recruitment of personnel is a further indication of low use of internet services in secondary schools in Bungoma East Sub County.

Results also showed that during selection of employees, school administrators rarely checked the basic computer literacy of the personnel to be recruited unless it was a direct requirement for the job for which they were being recruited, like in the area of recruiting a teacher to teach computer subject, a computer technician, or a librarian. Only two (11.11%) Principals reported that the school put emphasis on this as compared to 16 (88.88%) who disagreed with the statement. None of the respondents was undecided over this statement. Such laxity in laying emphasis on recruiting personnel of ICT knowledge could be one reason schools were facing challenge of shortage of skilled ICT personnel.

This is likely to have affected the administration in that even with the presence of ICT infrastructure, personnel underutilized it due to lack of enough skills. The results therefore indicated general low use of ICT in selection process in schools in this region.

4.3.2.2 H.O.Ds Responses on Use of ICT in Advertisement, Recruitment and

Selection of Personnel

H.O.Ds responses on the items of advertisement, recruitment and selection were as indicated in Table 4.5.

Table 4.5

H.O.Ds Responses on Use of ICT in Advertisement, Recruitment and Selection of Personnel:

Use in Advertisement Recruitment and Selection	Agree		Undecided		Disagree	
	F	%	F	%	F	%
Internet posting/advertisement of vacancies	0	0	0	0	180	100
Internet recruitment	0	0	0	0	180	100
Checking computer literacy	14	7.77	0	0	166	92.22

H.O.D's responses in table 4.5 show that schools did not use internet to advertise vacant positions. Internet recruitment was also not embraced in all schools under study, this was shown by responses from 180 (100%) H.O.Ds who disagreed with the stated statement.

Findings here went against the first principal of Fredrick Taylor's Scientific Management Theory that stated; The Rule of Thumb methods should be replaced by scientifically approved methods of management that enhance productivity. Advertisements and recruitment that is internet enabled are scientific methods that can enhance productivity if embraced. Results also showed that during selection of employees, school administrators rarely checked the basic computer literacy of personnel to be recruited, only 14(7.77%) H.O.Ds reported that the school checked the literacy of those to be employed, 166 (92.22%) H.O.Ds disagreed with the statement. Most likely, if emphasis was put on computer literacy, there is likelihood that prospective new employees could make an effort to be computer literate hence advantaging the schools in terms of skills.

4.3.3 Use of ICT in Enrolment, Admission, Placement and Induction of Personnel in Secondary Schools

Items in this section were administered to H.O.Ds and principals. The aim was to gauge views of respondents on how ICT is used in different areas of enrolment, admission, placement and induction of personnel in the secondary schools.

4.3.3.1 Principles' Responses on Use of ICT in Enrolment, Admission, Placement and Induction of Personnel in Secondary Schools

Principals were asked to indicate how ICT was embraced during enrolment, admission, placement and induction of personnel basing on enlisted items. The results were as tabulated in Table 4.6.

Table 4.6

Principles' Response on Use of ICT in Enrolment, Admission, Placement and Induction of Personnel in Secondary Schools

Use of ICT in Enrolment, Admission, Placement and Induction	Agree		Undecided		Disagree	
	F	%	F	%	F	%
Admission letters and other circulars are typed and printed	18	100	0	0	0	0
Admission is done through web enabled services	0	0	0	0	18	100
Electronic data storage is embraced	11	61.11	0	0	7	38.88
E-allocation of halls and classes is done	0	0	0	0	18	100
Induction is done via school website	4	22.22	0	0	14	77.77

Source: Field Data (2014)

Frequencies and percentages indicated in Table 4.7 showed that, 18(100%) Principals reported that all invitation letters for new students and other circulars were either typed

and rolled or printed. This word processing put typewriters, computers and printers as commonly used ICT gadgets in enrolment and admission. This could be so because of the education policy which demands that all students' admission invitation letters be typed and send in form of a physical letter to their respective postal addresses, although back-up communication can be e-mailed to their respective e mail addresses.

Eighteen (100%) Principals said that admission through web enabled services like staff or students' online registration was not embraced. When probed on the same through interview, Principals simply indicated that their schools had not reached such levels of technological development, but hoped to do that with time. An indication by 11(61.11%) Principals showed that electronic data storage was done during admission and enrolment, while 7(38.88%) disagreed with this view. Information about personnels' background was stored on computers for future reference. Interviews on principals revealed that, the stored information included; date of birth, parents' or guardians' names, address or contact numbers, schooling history, scores and health records, disciplinary information and activity involvement record. This information built up personnels' database module which contributed to easy running of the school through easy and fast retrieval and update of information. Findings of this study were in agreement with the findings and views of other researchers (Make, 2008; Vischer, 2001& Avison, 2003, Krishnaveni &

Meenakumari, 2012 and Ddungu, 2006) which showed that computers were useful in processing and storage of information in learning institutions. In this study 18 (100%) principals indicated that there was no e-allocation of classrooms, halls or hostels. Results therefore revealed that although computers were used in word processing and information storage, its use was not extended so as to encompass other functions of admission like on-line registration. If this was embraced, there is a likelihood that it could have made administration much easier as Maki (2008) and Vischer, (2001) postulate.

On placement, respondents were to indicate if their schools had an inbuilt placement module or generally if they embraced e-allocations of classes and hostels, reports showed that there was no use of computers in the area of placement. Interview results showed that Placement monitoring was done manually by checking on the manual time table to find out areas that needed more staff. Placement of students was also manual by checking class registers and hostel registers to see the space that needed to be filled. Principals argued that the number of teachers and non teaching staff was not large as to warrant intervention of computer placement. Although most of the reviewed researchers were silent on computer use in placement of staff in schools, Joagenson and Stiroh (2000) indicated that, where an organization has staff populations of over 300, computers come in handy on placement. A special computer placement software program installed will

always show where there is a deficiency and inequality in numbers and gender in class streaming, hostel or dormitory allocation and will automatically balance the numbers as new members report. All schools under this study have a population of 300 and above (staff and students) yet none of them used computer based human resource placement program. This is an indication that the area of placement has to be given more consideration by administrators in as far as ICT use is concerned.

On induction, respondents were asked to indicate how new members of staff were inducted in their schools. According to responses, 4(22.22%) Principals gave a positive indication that new members of staff were inducted by being exposed to details about the school that were stored on school websites. Fourteen (77.77%) Principals disagreed with the statement. None of the respondents was undecided over this issue. According to the principals who agreed, information posted included: history of the school, management structures and performance in internal and external exam, co-curricular activities, location and other background information. This percentage, although low, was in line with the observations of Jefkins (1998) which indicated that, induction literature for new staff can be availed electronically: it can show the history of the organization, how it works, and family tree of management, functions and achievements. According to Joagenson and Stiroh (2000) electronic induction enables new members of the institution

to get rightful information about the institution with a lot of ease and independence hence it should be embraced.

Interviews conducted on Principals indicated that the induction process was mostly done manually by the help of old members of staff. All these were an indication that use of ICT in induction process was extremely low. According to principals, this partly explained why some staff members had little knowledge of some vital information about their schools. Administrators in schools in the sub-county should be made to see the need of strengthening use of ICT in this sector to avoid stress of manual induction, and dependence on other colleagues, that most times leave new members of staff without the necessary detailed information about their new station and this makes them fail to orientate and adjust as quickly as possible. Information posted on website can ease the trouble of new members having to depend on older staff members for information which may not be easy-coming.

4.3.3.2 H.O.Ds Responses on Use of ICT in Enrolment, Admission, Placement and

Induction of Personnel in Secondary Schools

H.O.Ds were asked to indicate how ICT was embraced during enrolment, admission, placement and induction of personnel basing on enlisted items. The results were as tabulated in Table 4.7.

Table 4.7

H.O.Ds Responses on Use of ICT in Enrolment, Admission Placement and Induction of Personnel in Secondary Schools

Use of ICT in Enrolment, Admission, Placement and induction	Agree		Disagree		Undecided	
	F	%	F	%	F	%
Admission letters, circulars are typed and printed	180	100	0	0	0	0
Admission is done through Web enabled services	0	0	0	0	180	0
Electronic data capture and storage	105	58.33	0	0	75	41.66
E-allocation of halls and classes	0	0	0	0	180	100
Induction through school website	44	24.44	0	0	138	75.66

Source: Field Work Data (2014)

According to response tabulated in Table 4.7, 180(100%) H.O.Ds reported that computer word processing was embraced during admission. One hundred and eighty (100%) H.O.Ds said that admission through web enabled services like students' online registration was not embraced, this showed that all secondary schools under study did not use technology enabled admission. An indication by 105(58.33%) H.O.Ds showed information of the person being admitted was electronically captured and stored. Seventy Five (41.66%) H.O.Ds disagreed with this view. Findings of this study were in agreement with the findings and views of other researchers (Make, 2008; Vischer, 2001& Avison, 2003). 100% respondents indicated that there was no e-allocation of class and hostels. That meant that the allocation was done manually. Manual transactions usually consume time. Furthermore, they are stressful and require more labour. They are also less accurate. The elements of Scientific Management theory; quick task allocation, use of time saving devices and specialized supervision were therefore not enhanced in secondary schools in Bungoma East sub county. There is need for the administrators to embrace ICT use in this sector for the purpose of efficiency, accuracy and time saving as it is entailed in the Scientific Management Theory.

On placement, H.O.Ds indicated that their schools did not embrace e-allocations of classes and hostels. According to responses, 44(24.44%) H.O.Ds said that new members

of staff were inducted by being exposed to details about the school that were stored on school websites but 138 (76.66%) disagreed with the statement. None of the respondents was undecided over this. Percentages show that use of ICT in induction is below average. There is need for improvement in this sector in schools in Bungoma East Sub county so as to ease the speed of performance.

4.3.4 ICT Use in Communication between Personnel in Secondary Schools

Items in this section were administered to H.O.Ds and Principals. The aim was to gauge the views of respondents on how ICT is used in different ways in communicating administrative matters in the secondary schools.

4.3.4.1 Principals Responses on ICT Use in Communication between Personnel.

Principals' opinion on how ICT is used in Communication was sought. Results were as indicated in table 4.8.

Table 4.8**Principals Responses on ICT Use in Communication in Secondary Schools**

Communication Mode	Agree		Undecided		Disagree	
	F	%	F	%	F	%
Typed letters	17	94.44	0	0	1	5.56
E-mailing services	4	22.22	0	0	14	77.77
Phone calls	18	100	0	0	0	100

Source: Field Work Data (2014)

Results showed that 17(94.44%) Principals indicated that communication was mostly done through letters processed through word processing, 1 (5.56%) Principals disagreed with this view. Communication through e-mail was indicated by 4(22.22%) Principals while 14 (77.77%) did not concur with the view that communication was always done through e-mailing services. There was no respondent who was undecided on this. Communication through phone calls was reported by 18(100%) Principals. In three (16.66%) schools, teachers e-mailed students' marks direct to the office of the Director of Studies. Some official communication from the principals' office was also e-mailed to H.O.Ds especially during holidays. This made easy the planning of activities in the school. In schools that embraced e-communication, a data base was formed encompassing all e-mail addresses of the staff members and when a common message

needed to be passed on to them, group sending could be done and all the messages send at ago, a service that most Principals applauded because it made easy their administrative communication. Although there was some agreement between the results of this study and that on Gayaza School (Ddungu, 2006), it is apparent that this percentage of use in e-mailing was low, in comparison to that of Gayaza School which indicated a 90% use of e-mailing services. The low use of this internet service indicates that there is need to enhance the use of e-mails and other ICT communication means in administration of schools in Bungoma East Sub County. Results of Principals' interview revealed that the service was rarely used because the school community could not access internet services in their area of residence. It was then apparent that mobile phone services were the most appropriate.

The results gave a clear indication that many schools in Bungoma East Sub County, even those with computers, could not access internet services. This most likely resulted from the fact that most of them were not connected to the internet much as they had computers for administrative use. Interviews on principals brought out the fact that most of the internet access was done through use of modems or a visit to commercial cyber cafes because most schools were not linked to the internet.. These findings support the findings of Glenn (2007) whose study showed that although a small number of schools in Kenya

had a high internet provider, there was limited penetration of this national infrastructure into rural and low income areas. Consequently, there is limited access to dedicated phone lines and internet services in schools in Bungoma East Sub County due to network and financial implications.

4.3.3.2 H.O.Ds Responses on ICT Use in Communication

H.O.Ds were asked to indicate their opinion on the use of ICT in their secondary schools, the responses were as tabulated in Table 4.9.

Table 4.9

H.O.Ds Responses on ICT Use in Communication

Communication Mode	Agree		Undecided		Disagree	
	F	%	F	%	F	%
Typed letters	170	94.44	0	0	10	5.55
E-mailing services	38	21.11	0	0	142	88.89
Phone calls	180	100	0	0	0	0

Source: Field Work Data (2014)

Results indicated in Table 4.9 clearly show that a lot of communication was done through typed letters and phone calls. 170 (94.44%) H.O.Ds indicated that typed letters are used

in their school for communication against 10 (5.55%) who disagreed with the view. E-mailing services were indicated by only 38(21.11%) H.O.Ds while 142 (88.89%) said that e-mails were not used. By the indication of H.O.Ds, e mailing was very lowly embraced; this was likely caused by insufficient infrastructure in the schools and lack of reliable network as it was evident in the principals' interviews. Phone call use was popular since it was indicated by 180 (100%) H.O.Ds. Although results of the study concurred with that of Ddungu (2007) which indicated high use of e-mailing services at Gayaza school of Uganda (90%), uses of e-mailing services in secondary schools in Bungoma East require to really be improved on so as to enhance swift communication and save time as advocated by the Scientific Management Theory of Taylor (2011).

4.3.4 Use of ICT in Staff Development, Appraisal and Motivation of Staff in

Secondary Schools

Items were administered on both Principals and H.O.Ds. Respondents were asked to indicate how staff development in ICT was enhanced in their schools. Objective was to find out if schools took the initiative of equipping their staff with the necessary skills to enable them to be able to use ICT in administration in line with the second Principal of Scientific Management Theory, which called for staff development sponsored by the organization in Scientific methods of management.

4.3.4.1 Principals' Responses on Use of ICT in Staff Development, Appraisal and Motivation of Staff in Secondary Schools

Principals were asked to either agree or disagree with the statements stated that denoted the use of ICT in staff development, appraisal and motivation. Their responses were as put down in Table 4.10

Table 4.10

Principals' Responses on Use of ICT in Staff Development, Appraisal and Motivation in Secondary Schools

Use of ICT in staff development	Agree		Undecided		Disagree	
	F	%	F	%	F	%
Staff are involved in open learning	6	33.33	0	0	12	66.67
School sponsors staff for ICT seminars	6	33.33	0	0	12	66.67
Computer classes for staff are offered by the school	8	44.40	0	0	10	55.60

Source: Field Work Data (2014)

Findings showed that Staff development and motivation in ICT was enhanced to a minimal level in various ways. Six (33.33 %) Principals indicated that teachers in the schools participated in open and distance e- learning programs in various colleges as a

way of enhancing knowledge and skills in their area of study, while 12 (66.67%) Principals disagreed with this statement. Low participation in open learning programs could be as a result of lack of ICT infrastructure to facilitate the learning. Information collected indicated that 6(33.33%) Principals reported that they sponsored staff members for computer related seminars and workshops. Twelve (66.67%) Principals disagreed with the idea. Results indicate a very small effort by school principals in regard to sponsorship of staff for ICT seminars. The low effort was attributed to lack of finances. Only fourteen teachers from secondary schools in Bungoma East Sub County had been sponsored for such workshops done in Kenya in the last five years. Backer (2000) has argued that even where people are motivated to engage in an activity, they must have the competence necessary to do so, hence the need for personnel staff development.

In line with the same Ddungu (2006) reports that, Gayaza secondary school sponsors teachers to go out for training workshop, conferences and opportunities in ICT to enhance their skills. Four teachers from the schools attended an e-learning conference in Kenya in 2006 while six more were to attend one in Ghana in 2007. This shows that the sponsorship in Bungoma East Sub-county was extremely low as compared to that of Gayaza high school which had sponsored ten teachers. School administrators in Bungoma East Sub-county therefore need to step up the sponsorship.

Eight (44.40%) Principals reported that they organized internal computer classes for the staff while 10 (55.60%) disagreed with the statement. Reports from interview on Principals who said that staff was sponsored showed that staff received training in basic computer skills such as word processing, spreadsheets, internet research and excel. Ddungu (2006) has observed that teachers at Gayaza High school had been internally trained in core ICT skills such as word processing, spread sheets, curriculum technology integration and internet use. Just as this study observes, administrators had made some efforts to have teachers acquire computer knowledge internally, but recommends that more efforts be embraced to ensure higher rates of sponsorship for skill acquisition.

In support of staff development in ICT, Boakye and Banini (2008) argued that teachers need to seek and receive initial and on-going training on how to use ICT to enhance their teaching and leadership skills. They call for “re-forming” teacher education rather than just trying to “re-tool” the teachers. Upon realizing this, the Ministry of Education, (2008) has given advice on online training modules developed by the Kenya Education Staff Institute (KESI). The statistics indicate that, not much effort had been put in place to ensure staff development in computer advancement in secondary schools in Bungoma East Sub County. This poses a challenge to the administrators in the sub county to make more efforts in this sector so as to ensure that as many as possible of the staff have the necessary skills for implementation and use of ICT in administration. If this is embraced , then the second principal of Scientific Management that calls for staff sponsorship in skill advancement for higher productivity will be fulfilled and hopefully,

production will be improved in these secondary schools, academically and discipline wise hence solving the challenges that are already being experienced.

4.3.4.2 H.O.Ds Response on the Use of ICT in Staff Development, Appraisal and Motivation of Staff in Secondary Schools

Questionnaire for H.O.Ds contained a set of items that denoted ways in which staff was developed in ICT skills, so as to equip them for administrative purposes. The objective was to find out the role that school administrators were playing to ensure that their staff members are equipped technologically to scientifically manage administrative activities in line with the second Principal of Taylor's Scientific Management Theory that was applied in this study. Results were as outlined in Table 4.11

Table 4.11

H.O.Ds Response on the Use of ICT in Staff Development, Appraisal and Motivation of Staff in Secondary Schools

Use of ICT in staff development	Agree		Undecided		Disagree	
	F	%	F	%	F	%
Members are involved in open learning programs	50	27.77	0	0	130	72.22
School sponsors staff for ICT seminars	16	7.77	0	0	164	91.11
Computer classes for staff are sponsored by the school	69	38.33	0	0	111	61.66

Source: Field Work Data (2014)

From the findings, the study found out that Staff development and motivation in ICT was enhanced to a very small level. Fifty (27.77%) H.O.Ds indicated that members of staff participated in open and distance e- learning programs with various colleges as a way of enhancing knowledge and skill in their area of study, while 130(72.22%) H.O.Ds disagreed with it. Information collected indicated that 14(7.77%) H.ODs reported that staff members were sponsored for computer related seminars and workshops,

164(91.11%) disagreed with the idea. The percentage indicated is fairly low and shows that administrators had not made remarkable efforts to skill their staff as was the case in Gayaza high school where many teachers were sponsored for seminars and workshops in different countries and within the school (Ddungu, 2006) and in the University in India where staff members were sponsored by the University to attend technology conferences (Krishnaveni & Meenakumari, 2012) The difference in the percentages of views expressed by principals and those said by H.O.Ds could have been caused by the fact that some of the staff members went for seminars and workshops with the knowledge of the principals but without the knowledge of H.O.Ds since they were only informed if the affected members belonged to their departments. Results indicate a very small effort by the school principals in regard to sponsorship of staff for ICT seminars. There is therefore a likelihood that many members might to have the opportunity to enhance their skills.

Sixty nine (38.33%) H.O.Ds supported the view that computer classes are offered by the school to members of staff. None of them was undecided over this statement but 111(61.66%) H.O.Ds disagreed with it. Overall results show that the effort made by administrators to enhance skills of staff members in secondary schools in the sub county was still low. Administrators in the sub county have to make efforts in this sector so as to ensure that as many as possible of staff members have necessary skills for use of ICT in

administration. Fredrick Taylor's Scientific Management Theory, in its second Principal lays emphasis on this. It states 'Scientifically select, train and develop each worker on the Scientific methods of production rather than passively leaving them to train themselves. This indicates that, there is need for the Board of Management to step up sponsorship of administrators in ICT methods of administration rather than leaving them to sponsor themselves.

4.4 ICT Use in Administration of Finances in Secondary Schools

The second objective was to establish use of ICT in financial administration of secondary schools in Bungoma East Sub County. The questionnaire consisted of items administered to two groups of respondents; Principals (n=18) and Accounts Clerks (n=18). The research question responded to was: In what ways is ICT used in relation to financial administration in secondary schools?

4.4.1 Principals' Responses on Use of ICT in Administration of Finances in Secondary Schools

Respondents were asked to indicate from the enlisted choices, ways in which their schools embraced use of ICT in management of finances. Responses were as indicated in Table 4.12

Table 4.12**Principals' Responses on ICT Use in Administration of Finances in Secondary Schools.**

Ways of embracing ICT in Finance	Agree		Undecided		Disagree	
	F	%	F	%	F	%
Use of computerized credit control module	2	11.11	0	0	18	100
Availability of automatic electronic fee control module.	0	0	0	0	18	100
Use of swipe cards/smart cards	0	0	0	0	18	100
Use of electronic funds transfer services like M-Pesa and Zap	11	61.11	0	0	7	38.88
Use of a special software for budget computation	0	0	0	0	18	100
Computerized financial records storage	16	88.88	0	0	2	11.11
On-line banking	0	0	0	0	18	100
Back-up records on flash disks, CDs,	9	50	0	0	9	50

Source: Field Work Data (2014)

On matters of credit control, schools typically buy from other businesses on credit. In some instances, schools also sell to other businesses on credit. Administrators use Computerized Credit Control module to have updated and accurate information about which creditors need to be paid and when money is due for debtors. The system allows separate management of supplies and creditors. All invoices received are immediately entered into the system. The software is equipped with various statements and reports to show the transactions for example aging

invoices, paid invoices, and statements of accounts for suppliers. From Table 4.12, none of the Principals said that their schools had a special program designed to automatically update the credit control.

Regarding availability of automatic electronic fee control module and availability of student fee portal, 18(100%) Principals indicated that they did not have or use this electronic module for fee control; neither of them had online student fee portal. This was an indication that fee payment was not electronically controlled therefore giving room to corruption and lack of accountability. Automatic fee control system is a system that automatically invoices fees paid to all students' portal and generates students' fee statements, arrears, fee structure and so on. The system also can generate demand letter to all students who are in arrears. Receipts are printed automatically from the system and any paid amount is broken down automatically to various accounts or vote-heads.

Respondents indicated that swipe-credit and debit-cards or smart-cards were not used by the schools in Bungoma East sub-county. Transaction processing systems like ATM were not used in the official school transaction, but the individual members of the school community embraced its use. Although use of swipe cards has the advantage of avoiding the expense and risk of handling cash and is generally a much more efficient payment method, interview on principals revealed that there was a fear of the cards being misused by some officers to their own advantage. Security checks to protect against theft by staff or by anyone else had not been put in place.

Respondents were asked to indicate if their schools had special software for budget computation. Eighteen (100%) said that their school did not have this software. As researches done in Indian schools (Computer' 2009) indicate, budget construction involves a lot of formulae and calculations whose efficiency is ensured by the use of computer financial packages. The use of electronic spread sheets facilitates this task by making it easy and time saving. The same study showed that computers help schools to maintain financial records regularly on activities like: income from students' fee and other internal sources like donations, grants and expenditure, preparation of salary for employees, accounting for debts and liabilities and maintenance of employers' records. It is therefore important that administrators enhance the installation of such soft wares to speed up efficiency and accuracy.

Students were allowed to be send money by their parents and guardians through money transfer services like M-Pesa, Orange Money and Zap, this was indicated by 11(61.11%) Principals. Seven (38.88%) of them disagreed with this view. Interviews conducted on principals however revealed that none of the schools had school owned money transfer kiosks or officially authenticated money transfer business in the schools. It was feared that such officialized business could easily encourage students to have mobile phones which was against the rules of all the schools under study. More so, none of the schools' owned mobile phones was officially used to carry out this transaction. Principals pointed out the difficult in accountability for such transactions and the extra expenses involved that could not be shouldered by the school as a hindrance to such transactions. Therefore students, parents and guardians had to make private arrangements with staff members to have money send through their phones. In two of the schools, class teachers were assigned responsibility of receiving money through their phones from parents and guardians on behalf of students.

On financial record storage, 16(88.88%) Principals indicated that they are stored on soft copies on computers. 100% response from each group confirmed that none of the schools purchased school items on-line. There was no on-line banking; neither was there on-line bill paying in the schools. The fact that the mentioned on-line financial transactions were not embraced could have been necessitated by the requirement that all school money transactions had to be officially receipted. Results of this study were quiet different from findings of the research of Owala (1995) at Salford University which revealed that the university embraced ICT use in financial administration since it was electronically connected to its suppliers and this made it possible to place requests for more materials through the computer using Electronic Data Interchange (EDI) which saved financial expenses and time. The fact that schools in Bungoma East Sub County did not purchase items on line posts the danger of using so much time and money on manual item purchase. Electronic purchases could help administrators to save more finances and time as is indicated by the Scientific Management Theory. Nine (50%) principals reported storage of back up information on flash disks and CD rolls. Storing of backup information catered for safety in a case where information on the computer gets destroyed.

4.4.2 Accounts Clerks' Response on ICT Use in Administration of Finances in secondary schools

Accounts Clerks were given questions that aimed to find out if and how ICT was embraced in financial administration. The responses were as indicated in Table 4.13

Table 4.13**Accounts Clerks' Response on ICT Use in Administration of Finances in In secondary schools**

Ways of embracing ICT in Finance	Agree		Undecided		Disagree	
	F	%	F	%	F	%
Use of computerized credit control module	0	0	0	0	18	100
Availability of automatic electronic fee control module.	0	0	0	0	18	100
Use of swipe cards/smart cards	0	0	0	0	18	100
Use of electronic funds transfer services like M-Pesa and Zap	14	77.77	0	0	4	22.22
School has special software for budget computation	0	0	0	0	18	180
Computerized financial records storage	16	88.88	0	0	2	11.11
On-line banking	0	0	0	0	18	100
Back-up records on flash disks, CDs	9	50	0	0	9	50

Source: Field Work Data (2014)

Regarding matters of credit control, 18 (100%) Accounts clerks indicated that their schools did not have the Credit control software installed in their computers. All of them also said that the fee payment process had not been electronically controlled hence they did not have an on-line fee portal for the students. Automatic fee control system was also not in use in these schools of Bungoma East according to response of accounts clerks. Respondents indicated that swipe-credit

and debit-cards or smart-cards were not used by the schools. Students were allowed to be send money by their parents and guardians through money transfer services like M-Pesa, this was indicated by 14(77.77%) Accounts Clerks while 4 (22.22%) of them disagreed with this view. A high number of respondents 16(88.88%) said that financial records of the schools were stored and evaluated on computers in the schools as compared to 2(11.11%) who disagreed. There was no on-line banking; neither was there on-line bill paying or items purchase in the secondary schools in the view of the accounts clerks, hence going against the elements of Scientific Management Theory. Nine (50%) Account Clerks reported storage of back up information on flash disks and CD rolls so as to ensure safety of information.

Account clerks were also asked to indicate computer packages that they used in financial transactions and results were as indicated in Table 4.14

Table 4.14

Computer Packages used by the Accounts Clerks in Administration of Finances in Secondary Schools

Computer package used	Frequency (F)	Percentage (%)
Microsoft Word	17	94.44
Microsoft Excel	16	88.88
Quick Book	4	22.22
Sage	4	22.22

Source: Field Work Data (2014)

The analysis in Table 4.14 shows that, word processing was the most used with 17 (94.44%) of respondents indicating its use. Ms Excel was reported by 16(88.88%) of the respondents. High use of Ms Excel and Ms Word was attributed to the fact that the programs are in-built and there is no extra expense in their installation. Quick book and Sage were rarely used since only 4 (22.22%) reported that they used Quick book and 4(22.22%) of the respondents indicated that they used Sage. Low use of Sage and Quick Book resulted from the fact that these were special programs that needed special installation which required money. Most schools were not in a position to cater for this extra expense. This information shows that some schools did not sacrifice much to allow for installation of other efficient and quicker financial packages that could make the work of the account clerks much easier. For this matter, many Account Clerks in secondary schools still handled financial statements manually. It is imperative that school administrators see the importance of having the financial soft ware packages that will make the working of account officers non strefull, efficient and accurate, giving rise to high productivity as seen in the Scientific Management Theory and as observed by a study by Oguta, Egessa & Musiega (2013) that concluded that ICT impacts positively on strategic educational quality standards in financial management.

4.5 Use of ICT in Monitoring and Evaluation of activities in Secondary Schools

The third objective was to investigate how ICT was used in monitoring and evaluation of programs in secondary schools. Questionnaires were administered to principals (n=18) and H.O.Ds (n=180). The main purpose was to find out how administrators used electronic devices to make a follow-up of activities in academic, boarding and general security matters. These could help them to be weary of changes in curriculum and monitor performance of staff and other stake

holders with the aim of creating and encouraging improvement and efficiency in curriculum, pedagogy, assessment and reporting, with flexible management and learning programs.

4.5.1 Principals' Response on Use of ICT in Monitoring and Evaluation of Activities

in Secondary Schools

Respondents were asked to indicate the frequency with which ICT was used in different aspects of monitoring and evaluation in schools. Frequency of use denoted how high or low ICT is embraced in the field of monitoring. The responses were as indicated in Table 4.16.

Table 4.16**Principals' Response on Use of ICT in Monitoring and Evaluation of Activities in Secondary Schools**

Areas in which ICT is used for monitoring	Always		Occasionally		Never	
	F	%	F	%	F	%
Academic M & E						
Attendance electronic log in system	0	0	0	0	18	100
Electronic marks storage	18	100	0	0	0	0
Computerized analysis of results	18	100	0	0	0	0
E-report card computation	6	33.33	0	0	12	66.67
On-line submission of marks	9	50	2	11.11	7	38.88
On-line registration of candidates	18	100	0	0	0	0
Boarding sector						
E-space allocation	0	0	0	0	18	100
Computerized meal cards/ control module	0	0	0	0	18	100
General security						
Computerized cataloguing in library and stores	7	38.88	0	0	11	61.11
School vehicles have working speed governors	18	100	0	0	0	0
Use of hidden, video lenses, cameras like CCTVs , screeners	0	0	0	0	18	100

4.5.1.1 Use of ICT in Academic Monitoring and Evaluation of Programmes

From the indication in Table 4.16, 18 (100%) Principals said that their schools never installed an electronic log-in system to monitor the attendance to school programs. This might have been contributed by the fact that some schools did not put emphasis on teachers logging in and out of school even manually, much as it is a requirement by the employer. Use of electronic log-in system was seen by principals as an expensive venture. Attendance levels are a measure of performance. As Amstrong (2005) reckons, record of absence is considered as an indication of either reliability or un reliability. Monitoring and evaluation should be carried out analytically, fairly, systematically, consistently, transparently and objectively. One of the ways to ensure this is to computerize job evaluations to a greater degree. The position taken by principals in schools in Bungoma East Sub County goes against the views of Amstrong, in this, quality of monitoring is compromised.

Eighteen (100%) Principals indicated that ICT was always used in recording and computing exam marks because it was electronically computed and stored on the computer, using MS word and Excel programs. Simple to use graphic user interface for data entry had been installed in some computers in two of the schools. This module automatically assigns an agreed upon symbol where marks are missing and adds up all concerned marks and returns a tentative grade. This has made work easier for teachers and administrators like officers in charge of exams. Spreadsheets and SPSS programs were also used in most of the schools to compute results.

A report from 6(33.33%) Principals indicated that schools had installed special programs on the computer for report card computation. These enabled them to carry out report card making with a lot of ease, efficiency and effectiveness, given the high numbers of students that they needed to

compute results for. A high number 12 (66.67%) Principal indicated that such programs had never been installed on computers in their schools. Principals of the schools that had installed the programs further cited that, it lessened the teacher burn-out effect while those of the schools that had not installed these programs sited high expenses involved in installation as a reason

Nine (50%) principals observed that teachers always do on-line submission of marks and lesson plans, 2(11.11%) said that they occasionally submitted their marks online while 7(33.88%) indicated that their staff members never submit marks and lesson plans on-line. The number of teachers that used on-line submission for marks and lesson plans was average. This was against the views of Krishnaven and Meenakumari (2010) who advocated dissemination of e-kiosks to enhance quick communication.

Eighteen (100%) Principals said that registration of candidates for Kenya National Exam is always done on-line. Owing to the policy of Kenya National Examination Council that demands that candidates' registration be done on-line and that on-line registration be backed by manual registration, (KNEC,2010), schools in Bungoma East Sub county had to work in line with the directive. It is no wonder that the percentage on schools that use on-line registration had shot up to 100% in 2013 (Sub County Education, Bungoma East, 2013). On-line registration was seen to be fast, and less voluminous because the names were delivered in soft copy, the burden of typing the work was distributed to all examination stations hence making the process easier at KNEC office. Changes could also easily be made in the records incase need arose.

4.5.1.2 Use of ICT in Monitoring and Evaluation in the Boarding Sector

In student's accommodation and hostel management module, one can create any number of hostels by setting maximum capacity per hostel and the system is set to create and issue any boarding facilities plus clearance. This helps to manage records and inventory and give direction on hostel name, capacity, rate per room, room bed listing, student bed allocation, accommodation fees amount due, amount allocated and balance due, bed space available and so on. As shown in Table 4.16, respondents in the study indicated that none of the schools used computerized student accommodation and hostels management module. This meant that most secondary schools in Bungoma East sub-county missed the benefits of using such a module hence leading to stressful manual administration in boarding section.

Meals control module in catering enables creation in registration of members including their photos. The system is able to generate members' cards for all eligible members and it has a way of handling lost cards by allowing the user to update records. It also has a way of detecting and capturing those students or members who may use other people's cards or the stolen cards. It provides all the required reports and statistics on meals taken, generates statement of accounts. The researcher's interest was to find out if such modules exist in secondary schools in Bungoma East sub-county. Results revealed that 18 (100%) principals indicated that such a module was never used in their schools. This was an indication of low use of ICT in monitoring and evaluation of activities in the boarding sector in secondary schools in Bungoma East sub-county.

4.5.1.3 Use of ICT in Monitoring and Evaluation of General Security

Frequent serialization of materials in stores and library was reported by 7(38.88%) Principals Eleven (61.11%) reported that materials in stores and libraries in their schools were never serialized or catalogued on computers. Use of ICT in material resource management therefore remains very low in the sub county. Eighteen (100%) Principals reported that school vehicles were always fitted with working ICT related gadgets like speed readers and speed governors in order to monitor speed at which school vehicles travelled. This in return was a way of monitoring the safety of stakeholders who traveled in these vehicles. The high percentage could be because it is a safety requirement from the Ministry of Education that all school vehicles be fitted with the same. None of the principals indicated that school vehicles did not have speed readers and governors.

Use of hidden microphones, video lenses, cameras and chips in offices to monitor on-goings was not reported by any of the respondents. All respondents said they never used them. In the interview with principals, most of them said that these facilities were not available and were also unaffordable. The situation in these secondary schools in this regard contradicted views of Jefkins (1998) who reckons that many organizations have resorted to the use of electronic surveillance devices to monitor employees' performance and security. In industries like telecommunications, banking and insurance, as many as 80% of the employees are subjected to some form of electronic monitoring (Ministry of Communication and Technology, 2010). To eaves drop on employees, some companies use hidden microphones and transmitters attached to telephones and tiny fish eye video lenses installed behind pin holes in walls and ceilings. Video monitoring cameras (CCTVs) are also used in some instances to track those who steal company time through playing video games and idling around and also to track those who pose a security

threat to people in the institution. Companies eventually take necessary measures to curb this habit. None of this is applied in schools in Bungoma East Sub County. This is particularly dangerous in this error of insecurity posed by radicalism and people invading learning institutions and even bombing them. Security checks at the main gate and other strategic places in the schools, through use of scanners and CCTVs should be considered. Earlier researchers cited in this document were silent on the aspect of ICT use in monitoring. There is also no evident published literature on the state of ICT use in monitoring in schools in Bungoma East Sub county hence the present study fills this gap.

Generally, respondents recorded that there was either low or non-existent ICT use in some of the enlisted areas of monitoring and evaluation in secondary schools in Bungoma East Sub County. Such areas included use of computerized log in system, computerized hostel management and meals module and use of cameras to monitor security of resources. There is need for this area to be relooked into by administrators.

Results of Ayere's study (2008) on comparison of ICT application in NEPAD and NON-NEPAD schools in Kenya, indicated that, the NEPAD schools had embraced use of ICT in monitoring and evaluation by monitoring teaching loads so to help in implementing agreed policies in the sense that corrective action could be taken at a very short notice. ICT gadgets were used to monitor performance indicators like staff load, staff-student ratio and so on for the purpose of making formative and summative decisions. Secondary schools in Bungoma East Sub County should also embrace ICT use in monitoring and evaluation so as to enjoy these benefits.

4.5.2 H.O.Ds Responses on Use of ICT in Monitoring and Evaluation of Programmes

H.O.Ds were asked to indicate their views on how ICT is used monitoring and evaluation. Their responses aimed at showing the frequency of ICT use in some areas that had been outlined in the questionnaires.

4.5.2.1 H.O.Ds Responses on Use of ICT in Academic Monitoring and Evaluation of Programmes

H.O.Ds indicted role of ICT in academic monitoring and evaluation as shown in Table 4.17.

Table 4.17**H.O.Ds Responses on Use of ICT in Academic Monitoring and Evaluation of Programmes**

Areas in which ICT is used for monitoring	F	%	F	%	F	%
Academic M & E						
Attendance electronic log in system	0	0	0	0	180	100
Electronic marks storage	180	100	0	0	0	0
Computerized analysis of results	180	100	0	0	0	0
E-report card computation	68	37.77	0	0	112	62.22
On-line submission of marks or lesson plans	50	27.77	50	27.77	79	43.88
On-line registration of candidates	180	100	0	0	0	0
Boarding sector						
E-space allocation	0	0	0	0	180	100
Computerized meal cards module	0	0	0	0	180	100
General security						
Computerized cataloguing in library and stores	68	37.77	0	0	112	62.22
School vehicles have working speed readers and governors	160	88.88	0	0	20	11.11
Use of hidden, video lenses, cameras like CCTVs , screeners	0	0	0	0	180	100
Source: Field Work Data (2014)						

From the indication in Table 4.17, 180 (100%) H.O.Ds indicated that their schools never installed an electronic log-in system to monitor the attendance to school programs. 180 (100%) H.O.Ds indicated that ICT was always used in recording and computing exam marks since computer programs like SPSS were employed in this. A report from 68(37.77%) H.O.Ds

indicated that schools had installed special programs on the computer for report card computation that eased report card manual. Less time was used in this because totals, mean marks and positions of learners were fed automatically at the press of a button after feeding the formula. These enhanced accuracy in report card making. A high number 112(62.22%) H.O.Ds indicated that such programs had never been installed on computers in their schools. This implied that benefits of such programmes were forfeited by members of those particular schools hence disadvantaging them.

Fifty (27.77%) H.O.Ds observed that teachers always do on-line submission of marks and lesson plans, 50(27.77%) H.O.Ds said that they occasionally submitted their marks online while 79 (43.88%) H.O.Ds indicated that they never submit marks and lesson plans on-line. There was an average response in favour of this particular item, meaning that use of e-mailing was averagely done. There is still need for higher embracement of emailing services in schools in Bungoma East Subcounty. All (100%) H.O.Ds said that registration of candidates for Kenya National Exam is always done on-line in line with the policy of Kenya National Examination Council.

4.5.2.2 Use of ICT in Monitoring and Evaluation in the Boarding Sector

In student's accommodation and hostel management as shown in Table 4.17, respondents indicated that none of the schools used computerized student accommodation and hostels management module. Results revealed that 180 (100%) H.O.Ds indicated that such a module was never used in their schools. This was an indication of low use of ICT in monitoring and evaluation of activities in the boarding sector in secondary schools in Bungoma East sub-county.

4.5.2.3 Use of ICT in Monitoring and Evaluation of General Security

Sixty eight (37.77%) H.O.Ds reported that serialization of materials in stores and library was always done while 112 (62.22%) H.O.Ds reported that materials in stores and libraries in their schools were never serialized computers. Use of ICT in material resource management therefore remains very low in the sub county. An overwhelming 160 (88.88%) H.O.Ds reported that school vehicles were always fitted with working ICT related gadgets like speed readers and speed governors in order to monitor their speed for the purpose of safety of occupants.. Only 20(11.11%) H.O.Ds reported that vehicles did not have these gadgets. Use of monitoring video lenses, cameras like CCTVs monitor on-goings for security and efficiency purposes was not reported by any of the respondents. The implication is that the security of institution occupants was not guaranteed under such circumstances of unsecure operation. Generally, respondents reported low use of ICT in the area of monitoring and evaluation. There is need for the percentage to be improved in this sector in schools in Bungoma East Sub county so as to guarantee security of human and material resources.

4.6 Use of ICT in Public Relations in Secondary Schools

The fourth objective of the study was to find out how ICT was used in public relations. Questionnaires were administered on principals and H.O.Ds only. The results are as displayed in Table 4.17

Table 4.17**ICT Use in Public Relations in Secondary Schools**

Ways in which ICT is used in public relations	Principals n=18				H.O.Ds n=180			
	YES		NO		YES		NO	
	F	%	F	%	F	%	F	%
Computers in the school are linked to the internet	4	22.22	14	77.77	45	25	135	75
Functional e-mail address	8	44.40	10	55.56	86	47.77	94	52.22
The school has a functional website	3	16.66	15	83.33	25	13.88	155	86.11
The departmental offices are fully networked through phone connections	8	44.4	10	55.56	68	37.77	112	62.22
Some members of staff use social sites like Face book, Whats-up and Twitter.	6	33.33	12	66.67	67	37.22	113	62.77
Some staff members play interactive computer games	4	22.22	14	77.77	45	25	135	75
Availability of class web	0	0	18	100	0	0	180	100

Source: Field Work Data (2014)

According to the results in Table 4.17, 4(22.22%) Principals reported that computers in their schools were linked to the internet; this view was supported by 45 (25%) H.O.Ds. Some of this link was through school modem. Fourteen (77.77%) Principals and 135 (75%) H.O.Ds said that they did not have that linkage to the internet. None of them was undecided over this issue. School internet helped in public relations in various ways. From the interviews, one principal stated;

“Staff members have full access to the internet on the specified times according to the timetable put up by ICT department. Through this internet, members have interchange of information with their colleagues and friends from all over the country and outside. Students and teachers communicate and share data and information about our school with other schools in and out of the country. It is through this internet that our school has been known beyond bounds. The Journalist club of this school has put up a serious information exchange with two schools in Tanzania and an academic organization in the United States. The American based organization has now requested to send a few members to visit our school next year. Am sure many good things will follow afterwards. So Internet has made our information available in a quick and easy manner to the public all over the world”.

Eight (44.40%) Principals also reported that their schools had a functional e-mail address while 86(47.77%) H.O.Ds concurred with the principals’ view. Only 3(16.66%) Principals and 25(13.88%) H.O.Ds attested to the fact that their schools had a functional website addresses. The internet linkage, the availability of a functional e-mail address and web address could enhance on-line communication that developed partnerships between the home, school and community by building networks between the parents, students and educators. The functional website was useful in that all the information about the school was exposed to the world at a click of the button. This enabled the few schools that used their web site to advertise and expose themselves to the outside world. In the interview, a principal of one of the schools that had website connections attested to the benefits of the same since the school’s exposure on the website had earned some of the bright needy students scholarships through to university education. Even

then, the figures shown indicate that there was very low use of internet related services in enhancement of public relation, a fact that likely affected the publicity of the schools negatively. The benefits of being connected to the internet were in line with what Ddungu (2006) highlighted about Gayaza High schools' benefits; that the publicity through hosting ICT conferences acted as an advocacy that earned the school a lot of donation from foreign countries.

Respondents also indicated that some members of staff actively participated in on-line socialization sites like Twitter and Face Book. This was cited by 6(33.33%) Principals and 67(37.22%) H.O.Ds. Membership to these sites exposed members and helped them acquire and be in touch with friends from within and without. The large social net-working exposed the staff to a wide range of political and social knowledge. It also connected them to different communities and helped them develop a culture and knowledge exchange and planning based innovation just as observed by Botton and Houlihan (2008). Most of the staff that participated in this socialization did it from commercial cyber cafes during their free time and on their personal mobile phones because most schools were not connected to internet and even the few that had internet connection preferred its use for research and access to official websites like for KNEC and MOE.

In the view of principals, very few members of staff (4 (22.22)) socialized by playing together competitive interactive computer games. This could be attributed to the view that teachers had very limited time to engage in relaxation activities given the very heavy curriculum that they have to accomplish. Forty five (25%) H.O.Ds concurred with this view. Fourteen (77.77) principals said No to the statement as well as 135(75%) H.O.Ds. None of the schools had class webs created for different classes. A class web could ensure exchange of information between

classes, between teachers and parents and also between teachers and teachers or any other stakeholder. It could also ensure meaningful exchange between schools that were connected to the same. The fact that class websites are not used in secondary schools in Bungoma East poses a danger of their not being exchange of valuable and necessary information between stake holders. Interview on principals revealed that lack of finances and fear of misuse of class web by students were some of the reasons class webs were not introduced.

4.7 Challenges Faced by School Administrators in their Use of ICT in Secondary

Schools.

The fifth objective was to establish the challenges faced by the administrators in the use of ICT in the schools. The question responded to was: what are the challenges facing the use of ICT in administration of the schools? H.O.Ds and Accounts Clerks filled a closed ended questionnaire on this while the Principals had an interview on the same. Table 4.18 summarizes the findings of the questionnaire questions.

Table 4.18**Challenges Faced by Administrators in the Use of ICT in Secondary Schools**

Challenges	H.O.Ds		Accounts Clerks	
	F	%	F	%
Facility shortage	174	96.66	17	94.44
Insufficient funds	141	78.33	16	88.88
Shortage of finances	142	78.88	14	77.77
Lack of interest	142	78.88	14	77.77
Poor management of facilities	122	67.77	7	38.88
Power failure	86	47.77	10	55.56
Virus infection	109	54	10	55.56
Sabotage by staff	43	23.88	7	38.88

Source: Field Work Data (2014)

Findings indicated in Table 4.18 show that 174 (96.66%) H.O.Ds and 17 (94.44%) Account Clerks reported that there was shortage of ICT facilities. Shortage referred to a situation whereby the sharing ratio of the facility was more than 1:5. Most facilities in the schools had a sharing ratio of more than 1:50. Principals identified lack of funds as a cause for this. To reinforce and establish the extend of shortage or adequacy of facilities, an observation schedule or checklist was used to take record of ICT related facilities and services that were available in the schools. Researcher ascertained the functionality of the facilities through observing and probing of officers concerned. Percentages were calculated. Results were as shown in table 4.19.

Table 4.19**List of ICT Related Facilities and Services Found in the Schools**

Computer related gadget	Number available	Number in use	percentage
Computers	350	293	83.71
Printers	25	20	80
Photocopiers	08	06	75
Type writers	20	15	75
Television	28	23	82.14
Radio	30	22	73.3
Fax machines	0	0	0
Projectors	6	2	33.3
Landline phones	3	3	0
Mobile phones	25	25	100
Simu ya Jamii	2	1	50
Video machines	6	4	66.66
Microphone	08	06	
Flash disks	30	25	83.33
CDs	30	20	66.66
Active website	10	6	33.33

Source: Field Work Data (2014)

The schedule in Table 4.19 indicate the number of facilities and services available and the number of the same in use because in some cases, the schools had some facilities availed but they had been spoilt for a long period of time hence they were not put to use. Table 4.20 gives the details of these facilities and services.

Table 4.20 also showed that there were only 350 computers in all the 18 schools of which only 293 (83.71%) were in use and were to be used by a total staff of 11,740 people (Refer to table 4.1 for school population). This included; teachers, support staff and students. This gives an average ratio of 40.6 people per computer; ideally this confirms a serious inefficiency of this important facility. Furthermore, from the background information; the study revealed that the computers were un-evenly distributed with 8 out of the 18 schools having just 2 computers that were restricted to the office of the principal and the accounts clerks. For the other schools that had more than two computers, the distribution in the departmental offices was also un-even. The office of the Director of Studies also known as the exam office or Curriculum office was the most favored because it was argued that all the academic records of all the students were stored and monitored from this department and that the academic calculations of marks following exams done was very hectic and it needed the aid of computer packages like Ms Excel, word, SPSS extra. Seven out of the 18 academic departments had computers for departmental administrative use (Refer to Table 4.2). The Math department was considered second in the distribution of the computers because in many schools, computer as a subject fell under the wider department of mathematics. In most schools, computers were stored and used in the computer lab for instruction implementation but not for direct administrative purpose.

The observation schedule also showed that all the 18 schools had a total of 20 printers, 6 photocopying machines and 12 typewriters. Each one of the schools owned a radio and a television. There were a total of 30 radios but only 22 (73.33%) were in use. Only 3 schools had access to internet connections one of which was through a modem bought by the school. None of the schools had a fax machine. This confirms that there was serious shortage of infrastructure in the schools in this sub county hence the principals found it strenuous to use the few resources

to enhance efficiency. The researcher therefore warmly welcomes the solution given by the Ministry of Education that the MOE will leverage e-government initiative of networking public institutions country wide to facilitate access and connectivity for the education sector (Glenn, 2007). Interview conducted on Principals revealed that there were no sufficient funds to purchase facilities since the subsidy they get from the government is minimal. Such serious shortage is likely to have hampered efficient and effective administration of secondary schools in Bungoma East Sub county in that even members who have skill necessary for operation, they cannot be applied. Computations will be done more slowly and might not be as accurate. This might end up stressing the administrator and causing burnout. Hence making administrative work cumbersome. This findings concur with other findings elsewhere (Odera, 1996; Ajayi & Ekundayo, 2002) whose studies also identified shortage of facilities as a serious challenge in educational institutions that they studied.

Insufficient skills among workers were reported by 141 (78.33%) H.O.Ds and 16(88.88%) It therefore follows that school administration is likely to be affected in that even if Principals could purchase the necessary infrastructure, they were likely to lack users. Inaccurate figures, low speed of performance of tasks, like in the office of accounts and Exams, fatigue and inefficiency are likely to be characteristics of such an administration. Interviews on Principals confirmed that some schools in Bungoma East Sub county are undergoing such effects. Results of the present study concur with that of Glenn (2007) which showed that the ICT plan has deficit in terms of human resource capacity to lead and support the implementation of the plan. Skill levels in the school system are very low. Results here concurred with the outcomes of the study of secondary schools in Nandi North (Menjo & Boit, 2013) The need of training school managers and teachers is widely recommended.

The third highly experienced problem was lack of interest among staff members; hence very little effort was made by them to enhance their computer literacy. Lack of interest to learn computer was reported by 122(67.77%) H.O.Ds and 14(77.77%) Account Clerks. This contributed to the challenge of insufficient skills. It was reported that most of the staff in the schools went through school during the error when computers were not in use hence they did not develop a lot of interest in what they considered to be modern generation technology. These findings concurred with those of a study done by Ddungu (2006) at Gayaza School, which indicated that teachers' negative attitude was a challenge in implementation of ICT use in school administration and instructions

Power failure was a challenge reported by 86(47.77%) H.O.Ds and 10(55.56%) Accounts Clerks. Principals through the interview confirmed that this was a great challenge because it slowed down the work, affecting deadlines. It also led to the loss of work already processed on the computer in a case where the work had not been saved, hence causing frustration and discouragement to the user. Most computers did not have power banks to store power. It was reported that some of the schools that had embraced the use of computers in administration had automatic generator power supply to supplement electricity failures. This helped to reduce on the impact of power failure.

The challenge of virus infection was reported by 109(60.55%) H.O.Ds and 10(55.56%) Account Clerks. Principals reported cases where virus from the internet had infested their computers and crashed very important documents and flash disks, causing loss of very important records. Sabotage by personnel reported by 43(23.88%) H.O.Ds, 7(38.88%) Accounts Clerks was the least observed challenge. This occurred mostly among students who could ones in a while

disappear with cables and mishandle the ICT gadgets, but principals reported that stern disciplinary measures taken against the culprits of vandalism had deterred the habit.

Shortage of finances to buy facilities was the second highly experienced challenge reported by 142 (78.88%) H.O.Ds and 14 (77.77%) Accounts Clerks. Principals indicated through the interview that, despite the fact that the government tried to give financial help towards the running of the school through bodies like CDF and LATTIF, amount given was too low to cater for acquisition of enough ICT infrastructures. ICT being a non examinable subject and given the fact most of the use of ICT in schools is Curriculum based, Principals do not usually give it the first priority when funds are insufficient. This problem of shortage of finances leading to shortage of facilities makes it impossible for staff with skills to apply its use in educational administration of schools. Results of this study are in line with the findings of Amutabi (2004) which indicated that shortage of funds was one of the challenges that affected use of ICT in educational institutions.

CHAPTER FIVE

SUMMARY, CONCLUSIONS AND RECOMENDATIONS

5.1 Introduction

This chapter contains information on summary of findings, conclusion and recommendations of this study.

5.2 Summary of the Findings

The summary is based on findings as per the objectives of the study.

5.2.1 Use of ICT in Human Resource Management in Secondary Schools

The first objective of the study was to examine the use of ICT in Human Resource Management in secondary schools in Bungoma East Sub County. The study found out that, in planning of human resource, mobile phones were used for coordination of school stake- holders as indicated by 15(83.33%) Principals and 154(85.55%) H.O.Ds. Computers were used in word processing and storage of data as shown by all Principals and all H.O.Ds whereas computers were also used in budget preparation. Computer conferencing and e-timetabling were not used in schools in the sub county.

The study revealed that there was no use of internet in advertisement, recruitment and selection of personnel for vacant positions, hence narrow use of ICT was registered in this area. In enrolment, admission, placement and induction of personnel, findings

indicated that, all Principals and all H.O.Ds reported that invitation letters for new students and other circulars were either typed and rolled or printed. All Principals and H.O.Ds also said that web enabled services like students' online registration and e-allocation of space were not embraced. An indication by 11(61.11%) Principals and 105(58.33%) H.O.Ds showed that electronic data capture was done during admission and enrolment. On induction, only 4(22.22%) Principals and 44(24.44%) H.O.Ds gave a positive indication that new members of staff were inducted on-line. These showed that use of ICT in induction process was extremely low.

As regards communication between Personnel, results showed that it was done through e-mail as indicated by 4(22.22%) Principals and 38 (21.11%) H.O.Ds, and through mobile phones as reported by all Principals and all H.O.Ds.. There was generally low use of ICT in this sector. Findings showed that Staff development and motivation in ICT was enhanced through participating in e- learning programs with various colleges, Six (33.33%) Principals and 50(27.77%) H.O.Ds indicated that. This low participation could be as a result of lack of ICT infrastructure. Four (22.22%) Principals and 14(7.77%) H.O.Ds reported that schools sponsored staff members for computer related seminars and workshops. Eight (44.40%) Principals and 69(38.33%) H.O.Ds reported that schools

organized internal computer classes for staff where they received training in basic computer skills.

5.2.2 ICT Use in Administration of Finances in Secondary Schools

The second objective was to establish the use of ICT in financial administration of secondary schools in Bungoma East Sub County. Findings showed none of the schools embrace special program designed to automatically update the credit control. All respondents said that Automatic electronic fee control module and online students' fee portal, were not embraced in all schools under study. This was an indication that fee payment was not electronically controlled therefore giving room to lack of accountability. Swipe-credit or smart-cards were not used by the schools. The study revealed that computers were used in drawing up budgets and in maintaining financial records regularly. Use of money transfer services like M-Pesa, Orange Money and Zap, was indicated by 11(61.11%) Principals and 14 (77.77%) Accounts Clerks. There was no on-line banking; neither was there no on-line item purchase nor on-line bill paying in the schools.

Word processing was the most used package with 17 (94.44%) Accounts Clerks indicating its use. Ms Excel was reported by 16(88.88%) Accounts Clerks. Quick book and Sage were rarely used since only 4 (22.22%) Accounts Clerks reported use of each one of them.

5.2.3 Use of ICT in Monitoring and Evaluation of activities in Secondary Schools

The third objective was to investigate how ICT was used in monitoring and evaluation of programs in secondary schools. Findings showed that, under Academic monitoring and evaluation, 18 (100%) Principals and 180 (100%) H.O.Ds said that, their schools never installed an electronic log-in system to monitor attendance to school programs because it was expensive.

Eighteen (100%) Principals and 180 (100%) H.O.Ds indicated computer use in recording and computing exam marks. A few schools, as indicated by 6(33.33%) Principals and 68(37.77%) H.O.Ds used e-report card computation. Nine (50%) Principals and 50(27.77%) H.O.Ds observed that teachers always did on-line submission of marks and lesson plans. All schools registered candidates on-line for KNEC exams owing to the policy of Kenya National Examination Council that demands that candidates' registration be done on-line.

In the Boarding sector 18(100%) Principals and 180 (100%) H.O.Ds indicated that their schools never used both Computerized Student Accommodation module or Meals Control Module. This meant that all secondary schools in Bungoma East sub-county missed the benefits of using such a module hence leading to stressful manual administration in boarding.

In Monitoring and Evaluation on General Security, serialization of materials in stores and library was reported by 7(38.88%) Principals and 68 (37.77%) H.O.Ds all principals and 160 (88.88%) H.O.Ds indicated that school vehicles were always fitted with working ICT related gadgets like speed readers and speed governors in order to monitor the speed at which vehicles traveled. There was no use of hidden microphones, video lenses, cameras and chips and CCTVs in offices to monitor on-goings. Principals said that these facilities were not affordable. Generally, respondents recorded that there was either low or non-existent ICT use in some areas of monitoring and evaluation in secondary schools in Bungoma East Sub County.

5.2.4 Use of ICT in Public Relations in Secondary Schools

In public relation, findings indicated 4 (22.22%) Principals and 45 (25%) H.O.Ds. reported that computers in their schools were linked to the internet. This enabled exchange of information between schools and stakeholders. Eight (44.40%) Principals and 86(47.77%) H.O.Ds reported that their schools had a functional e-mail address. Only 3(16.66%) Principals and 25(13.88%) H.O.Ds reported that their schools had a functional website addresses. The internet linkage, functional e-mail addresses, and web addresses enhanced on-line communication that build networks between stake holders.

Respondents also indicated that some members of staff actively participated in on-line socialization sites like Twitter and Face Book. This was reported by 6(33.33%) Principals and 67(37.22%) H.O.Ds. Membership to these sites exposed staff members and helped them acquire and be in touch with friends from within and without. The large social net-working exposed the staff to a wide range of political and social knowledge. None of the schools had class webs created for different classes. This meant that there was lack of exchange of information between classes, teachers, parents and other stakeholders.

5.2.5 Challenges Faced by School Administrators in their Use of ICT in Secondary

Schools.

The study established that shortage of facilities was the most experienced problem as indicated by 174 (96.66%) H.O.Ds and 17 (94.44%) Account Clerks. Most facilities in the schools had a sharing ratio of more than 1:50. In the 18 schools, there were only 293 computers used by a total staff of 11,740 people, giving an average ratio of 40.6 people per computer, all the 18 schools had a total of 20 printers, 6 photocopying machines and 12 typewriters. Insufficient skills among

workers were reported by 141 (78.33%) H.O.Ds and 16(88.88%) Account Clerks. None of the respondents had a PHD nor Masters Degree in Computer studies. Only 10(5.55%) H.O.Ds had a degree. Respondents only had basic knowledge out of experience. Power failure was a challenge reported by 86(47.77%) H.O.Ds and 10(55.56%) Accounts Clerks. The challenge of virus infection was reported by 109(60.55%) H.O.Ds and 10(55.56%) Account Clerks. Sabotage by personnel reported by 43(23.88%) H.O.Ds, 7(38.88%) Accounts Another highly experienced problem was lack of interest among staff members; hence very little effort was made by them to enhance their computer literacy. This challenges most likely affected school administration in that performance of activities was delayed..

5.3 Conclusions

The study concluded that there was use of ICT in human resource management in some sectors. Mobile phones were used on a large scale in communication in all aspects of human resource management. Computer use was reported in the areas of word processing, storage of data and computation of statistics. E-mailing as a way of communication was below average. There was no e-timetabling, e-conferring, e- allocation of space and e-enabled admission process in schools under study. There was also under use of ICT in staff development and motivation. In general, although schools in Bungoma East Sub county embraced use of ICT in human resource, its utilization in most areas was still very low.

The study also concluded that in financial management, ICT was integrated in a few areas including, information storage and budget computation. However, electronic funds transfer services like Mpesa, on-line banking and swipe cards were not used for official school transactions but for students private needs through teachers in the schools. The schools did not

embrace Computerized Credit Control Module, Automatic Electronic Fee Control Module or use of online fee portal. Swipe cards and online banking was also not embraced. Schools did not also have the necessary special soft ware installed for financial budget computation. This therefore implied that, ICT use was still to be fully used in the area of Financial Administration.

In connection with ICT use in monitoring and evaluation, the study concluded that there was an above average use of ICT in the areas of Electronic storage of marks, analysis of results, online registration of candidates for KNEC exams and installation of speed governors and readers in school owned vehicles. However, very low use was reported in connection with e-report card computation , online submission of marks and lesson plans and in cataloguing of schools' stores and library materials. There was completely no use of ICT in the areas of use of Electronic log in system, e-space allocation monitoring, computerized meals control Module and use of hidden cameras and videos like CCTV.

On public relation, the study concluded that there was a very low use of ICT in all aspects. This included; internet connection and e-mailing. ICT use was therefore under used in these areas. There was no school that had introduced class web usage.

Regarding challenges facing administrators in their use of ICT, the study concluded that such included shortage of facilities, insufficient skills, shortage of finances, lack of interest, sabotage and virus infection of computers.

5.4 Recommendations

Based on the findings of the study and conclusions, the following recommendations were suggested.

- i. In connection with the use of ICT in Human Resource Management in secondary schools, the study recommends that school administrators should embrace use of ICT in a wide sphere of human resource management other than its concentration in the area of word processing and information storage in order to enhance efficiency and effectiveness in all sectors of human resource management. ICT use in the spheres like selection and recruitment, placement, induction and staff development should be enhanced more. Furthermore, technology of e-timetabling, e-log-in system, e-conferencing, e- allocation of space, creation of class webs and e-placement should also be embraced in administration of secondary schools in Bungoma East Sub County.
- ii. On the use of ICT in financial administration, the study recommends training of finance officers in secondary schools in Bungoma East Sub county on the ICT statistical programs to impart the necessary skills that will enhance their accuracy. It further suggests that administrators should install the necessary special soft ware programs in school computers for quick financial statistical transactions that will enhance efficiency.
- iii. In monitoring and evaluation, the study suggests the use of more advanced ICT related ways of monitoring programs in secondary schools in Bungoma East Sub county to curb corruption and enhance security. Monitoring of class attendance of staff and students should be made more ICT compliant by introduction of electronic Log in System and e-cataloguing for effectiveness to be achieved

- iv. In Public Relation, the study recommends that school administrators in Bungoma East Sub county make concerted efforts to have enough computers in schools connected to internet and open up more by making partnerships with other learning institutions and organizations in and out of the country.
- v. In the light of the growing impact of advanced ICT on the administration of the institutions, there is need for the government and stake holders to facilitate equitable access to ICT gadgets and services for all school administrators, staff and students. The study recommends that the government, in conjunction with school administrators in Bungoma East Sub county make efforts to deal with the challenges facing administrators in use of ICT so as to enhance more efficiency and effectiveness in schools. All schools should be equipped with adequate ICT hardware and soft ware.

5.4 Suggestions for Further Research

The study exposed the following areas that require further research:

- a) Influence of ICT on students, academic performance in KCSE in Bungoma East Sub County
- b) Impact of use of ICT in management of personnel discipline in secondary schools in Bungoma East Sub count.

REFERENCES

- Afshari, M., Abu-Bakar, K., Su Luan, W., Abu-Samah, B., & Say Foo, F. (2008). School Leadership and Information and Communication Technology. *The Turkish Online Journal of Educational Technology*, 7(4):82-91.
- Ajayi, P. & Ekundayo, M. (2002). ICT in schools and Colleges in Nigeria . *British Journal of Educational Technology*, 34(3): 357-366.
- Ambuko, B.S. (2008). Selection and use of Media in Teaching Kiswahili in Secondary Schools in Emuhaya District. Unpublished Masters Thesis, Maseno University, 2008.
- Amutabi, M.N (2004). *Challenges facing the use of ICT in Kenyan Universities* UNESCO forum colloquium On research and higher education policy 1-3 an ethnographic case studies of beliefs.
- Armstrong, D. (2005). *A handbook of Human Resource Management Practice*, (9th Ed.). Australian Schools. The perspective of the principal. Financial Times. Prentice Hall. Boddy,
- Avison, D. F.G. (2003) *Information Systems Development, Methodologies, Techniques and Tools*. London: McGraw-Hill.
- Ayere, M.A. (2008). *A comparison of ICT application in NEPAD and NON-NEPAD School in Kenya* (Doctor of Philosophy in Education Technology).
- Backer, A. (2000). *How to be better at managing people*. London: Constable Publishers.
- Balanskat et al (2006)., Abu-bakar, K., Wong, S. L. & Afshari, M. (2011). Principal's level of computer use and some contributing factors. *International Journal of Educational and Information Technologies* 2(4):121.

- Bates, A. (1993). *Broadcasting in education: An Evaluation*. London: Constable Publishers.
- Baylor and Ritchie (2002),, E.B (2007) Special issues on Universities as an organization: *Administrative Quarterly*, Vol.II, No.4. Johnson Graduate School of Management Cornell University USA.
- Ben-zionBarta ,M. (eds), (1995). *Information Technology in Educational Management*. London: Chapman and Hall.
- Bernhardt, V. L. (2000). *Designing and using databases for school improvement*. Larchmont, NY: Prentice Hill
- Best, M. & Kahn, K.P. (1993). Social Research Methodology. *The Turkish Online Journal of Educational Technology*,7(4):82-91.
- Bland ford, S. (1989). *Resource Management in Schools. Effective and practical Strategies for Self-Managing School*. London: Financial Times. Prentice Hall. – Boddy,
- Bonareri, A,A.(2013) *Influence of Principals' Characteristics on Integration of Information Technology in Management of Human Resource in Nyamira County, Kenya*. An Unpublished Masters Degree Project, Nairobi University
- Borg, W. R. (1981). *Applying Educational Research. A Practice Guide for Teachers*. New Boston: Kluwer Academic Publishers.
- Bundles. (2016). Scientific Management: Taylor, F & Gibreths: *Boundless Management*. Boundless 26th May2016. Retrieved 02 Nov.2016 from [https://www.bundles.com/Management textbook/organization theory](https://www.bundles.com/Management%20textbook/organization%20theory).

- Christiaens, P., Reyniers, L., & Rollé, G. (2010). *An Overview of ICT use in School Management*. London: Constable Publishers.
- Daisy, p. (2009). *Case studies in 21st century school administration: Addressing challenges for educational leadership.*: Sage Publications, Inc.
- Ddungu, P. (2006). *Good Practices Necessary for Effective Implementation of Information and Communication Technologies in Secondary Schools. A Case of Gayaza High School, Uganda*. Retrieved November 20, 2014 from, <http://www.gayaza@ya>.
- Empirical, G. (2006). *Use of computers and Internet in Schools in Europe: Cyprus*, Europeans commission: Information Society and Directorate General. Cyprus: Country Brief.
- Fraenkel, R.J. & Wallen, E.N. (1993). *How to design and evaluate research in education*. (4th Ed.). Illinois: F.E. Peacock Publishers, Inc.
- (Frank, J. (2011). Information-communication technology (ICT) and transport: does knowledge underpin policy?”, Telecommunications Policy, Vol. 26, pp.31 Cyprus, Europeans commission: Information Society and Directorate Daisy, 2009).
- Daisy, p. (2009). *Case studies in 21st century school administration: Addressing challenges for educational leadership.*: Sage Publications, Inc.
- Fullan , M. (2001) *Use of IT in Organization: An Overview*. London: Routledge Publishers.
- Fullan, M. (1993). *Change forces: Probing the depths of educational reform*. London: Falmer Press.

- Gakuu, C. M. (2006), *An analysis of the factors and attitudes that influence lecturers' readiness to adopt the use of ICT*. PhD. Dissertation University of Nairobi, Kenya. (Unpublished)
- Gakuu, C.M. & Kidombo, H,J. (2013), Closing the Chasm: are Secondary School Teachers in Kenya using ICTs Effectively to Deliver Curriculum Content? School of Continuing and Distance Education, University of Nairobi.Retrieved June 2017 from [http://www.goggle. Co.ke search? h/=em8q](http://www.goggle.co.ke/search?h/=em8q)
- Glenn, F. (2007) *Survey on ICT and education in Africa; Kenya Country report* Retrieved November 20, 2009 from [http:// www. Kenya-ICT](http://www.Kenya-ICT) Government of Kenya (2007) A Survey of e-Learning in education in Kenya
- Gyaase, P. O; Anokye-Sarfo , A & Bediako, Y. (2013). The Adoption Of Information And Communication Technology In The Public Sector; A Study Of The Financial Management In The Ghana Education Service (GES)
- Hallinger, P. (1995). Culture and leadership: Developing an international perspective on educational administration. *UCEA Review* , 34(2), 1, 4.
- Hawkins, R.J. (2002). "Ten Lessons for ICT and Education in the Developing World" in Dutta, S.
- Holmes (1993). Radio Education in Nepal. In Parraton H. (Ed.). *Distance Education For Chicago Teacher Training*. London Routledge.
- Homas, H & Nelson, K. (1996) *Social Research in Education*.London. Routledge Publishers.
- Jefkins, L. (1998). *Teachers as innovators: an evaluation of the motivation of teachers to use information and communications technology*. Report summary, MirandaNet, South Croydon

- Joagenson, D., & Stiroh, K. (2000). Raising the speed limit: US Economic Growth in Information Age. *Brookings Papers on Economic Activity* (125-236)
- Kwaku, G.H. (2004), Use of Communication and Technology in Schools. . retrieved Oct 2015, from <http://www.information.go.ke/docs/ICT%20Policy.pdf>
- Make, C. (2008). "Information and communication technology for administration and management for secondary schools in Cyprus". *Journal of Online Learning and Teaching*, 4(3), 18-20.(Retrieved on September 3, 2013, from <http://www.goggle.co.ke/search?h/=em8q>
- Menjo. D. K. & Boit J. M (2013) The challenges of using information communication technology (ICT) in school administration in Kenya. retrieved Oct 2015, from <http://www.information.go.ke/docs/ICT%20Policy.pdf>
- Mensah,J. & Marfo,S. (2009). Managing Technology Integration in schools: A South Africanperspective, *Journal of Educational Administration* vol. 41(2):186-200.
- Pelgrum and Plomp (eds), (1993).
- Mue (2006) Application of Information Communication Technology in School Administration in Public Secondary Schools in Lang'ata Division retrieved Oct 2015, from <http://www.information.go.ke/docs/ICT%20Policy.pdf>
- Ministry of Education National ICT Strategy for Education and Training (2006) Ministry of Education, Science and Technology/Ministry of Information and Communication. retrieved Nov. 2014, from [www.education.go.ke/MOESTDocs/NATIONAL20ICT%20STRATEGY%20FOR%20EDUCATION%20AND%20TRAINING%](http://www.education.go.ke/MOESTDocs/NATIONAL20ICT%20STRATEGY%20FOR%20EDUCATION%20AND%20TRAINING%20)

- Ministry of Education Science and Technology, (2005). *Kenya education sector support programme 2005-2010: Delivering Quality Equitable Education and Training to All* Ministry of Education Science and Technology, (2005). Nairobi, Gov Printers
- Ministry of Information and Communications, (2006). *National ICT Policy*. Retrieved Nov.2014 From . <http://www.information.go.ke/docs/ICT%20Policy.pdf>
- Ministry of State for Planning and National Development, (2008). *Millennium Development Goals, status report for Kenya-2007*. Nairobi, Government Press.
- MOE. (2008, May). Kenyan schools to become e-schools. *Elimu News: A newsletter of the Ministry of Education, vol. 3* , p. 27.
- Mugenda, O.M & Mugenda, A.G. (2003). *Research methods; quantities and qualitative approaches* Nairobi: ACTS
- Mue. M. (2006) *Application of Information Communication Technology in School Administration in Public Secondary Schools in Langata Division, Nairobi County*. Unpublished Masters Thesis.
- National Center for Educational Statistics, (2000). *Teacher use of computers and internet in Public schools*. Retrieved from PDF & Related info: <http://nces.ed.gov/surveys/frss/publications/2000090/index.asp>
- NEIS (2010) *Study of Computers in Education: Implementation of an Innovation in 21 Education Systems*, London: Pergamon Press.
- (Paramasivan. P. & Subramanian, P. (2009). The impact of office automation on the organization: some implications for research and practice. *Communications of the ACM*, 25(11), 838-847.

- O'Brien, W.H (2003). Computer-assisted school administration and management: The state of the art in seven nations. *Journal of Research on Computing in Education*, 24(1), 146–296.
- Odera, F.Y. (2002). *A study of computer integrated education in secondary schools in Nyanza province Kenya*. Doctorial Thesis University of Pretoria South Africa. Accessed May 2014 from <http://www.ict.gov.gh/pdf/on.the.spot->
- Oguta, O. J., Egessa, R. K. W., . Musiega D. (2013) Effects of Information Communication and Technology (Ict) Application on Strategic Educational Quality Standards Management in Bungoma County, Kenya
- Otieno, S. (February 22, 2010). KNEC issues new registration guidelines for KCSE Examinations. *The Standard Newspaper*. Nairobi- Kenya.
- Ouma, M.O. (1994). *Introduction of Information Technology in University administrative with special reference to Maseno University College, Kenya*. Kenya: Centre for Adult & Higher Education.
- Owala, B. O. J (1995) How Information Technology can improve services offered by Maseno University College (MUC) . Unpublished M.Sc Dissertation, University of Salford, 1995)
- Pan, A.f, (2006) ICT in secondary school administration in rural southern Kenya: An educator's eye on its importance and use. *International Journal of Education and Development using Information and Communication Technology (IJEDICT)*, 2011, Vol. 7, Issue 2:4-14.

- Paramasivan, J. & Subramanian, N. (2010) '*Diffussion of Innovations*' [5th ed.] New York: The free Press. Retrieved June 14, 2014 from <http://www.rogerclarke.com/SOS>.
- Republic of Kenya (2006). *National ICT Policy* . Ministry of Information and Communication. Retrieved February,9.2013. from <http://www.ict.gov.gh/pdf/on.the.spot->
- Republic of Kenya (2005). *Economic Survey: Ministry of Planning and National Development* Nairobi: Government Printers.
- Republic of Kenya (2005a) .Sessional Paper no. 1. *A Policy Framework for Education, Training and Research*.. Retrieved November, 2009 from [http:// www](http://www)
- Baylor and Ritchie (2002),, E.B (2007) *Special issues on Universities as an organization: Administrative Quarterly, Vol.II, No.4.* Johnson Graduate School of Management Cornell University USA.
- Salerno, S. (2009)). *Information and communication technologies in education*. Boston: Kluwer Academic Publishers
- Schiller, J. (2002). *Implementation of Information and Communication, Technology in Australian Schools. The perspective of the principal. In C. Crawford et al. (Eds) Proceedings of Society for Information Technology and teacher education international conference 2002 (Pp. 513-517) Chesapeake, VA; AACE* Retrieved November, 2009 from [http:// www Editlib. Org/P/10 566..](http://www>Editlib.Org/P/10566..)
- Sheng, H., Nah, F. & Siau, K (2005). *Strategic implications of mobile technology: A case of Secondary Schools Administration*. London Routledge

- Sloan, M. (2001). Administrative computing in the Australian educational system. *Journal of Research on Computing in Education*, 24(1), 120 -145.
- Solis (2011) *Critical Technology: Issues for School leaders*. Massachusetts: Corwin Centre for Adult & Higher Education.
- Taylor, H. & Hogenbirk, P. (2001). *Information and communication technologies in education. teacher education international conference 2002* (Pp. 513-517) *Teacher Training*. London. Routledge.
- Torrington, D., Hall, L. & Taylor, S. (2005). *Human Resource Management*. London. Routledge.
- Unachukwu, O & Nwankwo, O. (2009). *ICT use in institutions in Nigeria*. Ogoduguo. Mayeirs Publishers
- Visscher, A. (2001). Evaluation of the implementation, use and effects of a computerized management information systems in English secondary schools. *British Journal of Educational Technology*, 34(3), 357-366.
- Visscher, A. J. (1988) The computer as an administrative tool. *Journal of Research on Computing in Education*, 21, 28-35.
- Voogt, J. & Knezek, G. (2008). *International handbook of information technology in primary & secondary education: Part I*. New York: Springer.
- Wanjala, A.S (2013). *Teachers' perceptions on the Use of Information Communication Technology in the Administration of Public Secondary Schools in Kimilili District, Bungoma County*.

Wims, P. & Lawler, M.(2007). *Investing in ICTs in educational institutions in developing countries: An evaluation of their Impacts in Kenya*. International Journal of Education and Development using ICT Vol.3. No 1 Open journal systems

Zainally, H. (2008). Administration of faculties by information and communication technology and its obstacles. *International Journal of Education and Information Technologies*, 2(1) <http://ijedict.dec.uwi.edu//viewarticle.php?id=1593> (retrieved

APPENDIX A

PRINCIPALS' QUESTIONNAIRE (PQ)

The purpose of the study for which this questionnaire was designed is to evaluate the use of ICT in administration of schools in Bungoma East District. All your responses and information will be treated with utmost confidentiality and will only be used for analytical purpose of the study. Please give your view by filling in the blank space or putting a tick (✓) in the appropriate spaces that corresponds with your response.

1. SECTION A: BACKGROUND INFORMATION

i) Please state the total number of personnel in the school

Teachers () Support staff () Students ()

ii) How many computers are in your school? _____

SECTION B SPECIFIC INFORMATION

2. Administrative use of ICT in Human Resource Management

i. Use of ICT in Planning

Indicate your opinion about the following use of ICT in the planning of activities in your school.

(Indicate by ticking in the appropriate box)

Use of ICT in Planning	A	U	D
mobile phones are used to coordinate activities in the planning process in the school			
Computers are used to process, store and administer staff and students' biodata.			
Use of computer programs like Excel in budget preparation.			
Use of a special software for timetable making (e-time tabling)			
the school embraces e;conferencing			

ii. Use of ICT in advertisement, recruitment, and selection.

Indicate your opinion about extend to which ICT is used in the following areas in the school.

Where, A= Agree, U= Unsure, D= Disagree

Use of ICT in Advertisement, Recruitment and Selection	A	U	D
Internet posting/advertisement of vacancies			
Internet recruitment			
Checking computer literacy of interviewee			

iii. Use of ICT in Enrolment, Admission and placement.

Indicate your opinion about extend to which ICT is used in the following areas in the school.

Where A= Agree, U= Unsure, D= Disagree.

Use of ICT in enrolment, admission and placement	A	U	D
Admission letters and other circulars are typed and printed/rolled			
Admission is done through Web enabled services (filling admission forms on-line)			
Data capture and storage of personnel background/information is done electronically on the computer			
The school has an in-built placement module/E-allocation of halls and classes			
New members exposed to details about the school that are stored on the school website			

v. Use of ICT in Communication

Indicate your opinion about extend to which ICT is used in the following areas in the school

Where A= Agree, U= Unsure, D= Disagree. Indicate your by ticking in the appropriate space.

use of ICT in communication	A	U	D
Communication is mostly done through typed letters and other printed modes			
Use of e-circulars/ eg e-mailing services			
Use of Phone calls			

Vi. ICT use in staff development, appraisal and motivation

Indicate your opinion about extend to which ICT is used in the following areas in the school.

Where A= Agree, U= Unsure, D= Disagree. Indicate by ticking in the preferred box.

use of ICT in staff development	A	U	D
Members are involved in open learning programmes			
School sponsors staff for ICT seminars			
Computer classes for staff and students are offered by the school			

3. ICT use in Financial Administration

Indicate your opinion about the following use of ICT in your school to manage finances, where, Agree, A= Agree, U= Unsure, D= Disagree.

Ways of embracing ICT	A	U	D
Use of computerized credit control module			
Availability of automatic electronic fee control module.			
Use of swipe cards/smart cards			
Electronic funds transfer services- Students are send money through			

electronic money transfer services like M-Pesa and Zap			
A special software for budget computerization has been installed on the office computer			
Salary processing and pay slip generation is done on school computer			
Financial records are stored and evaluated on the school computer			
On-line banking			
Back-up financial records are stored on flash disks, CD rolls, VCDs and so on			

4. ICT use in Monitoring and Evaluation

i) Indicate the extent to which ICT is used in the following areas

(Indicate by ticking the appropriate number where 1= always 2= rarely 3= never)

Academic monitoring and evaluation	Always	Rarely	Never
School/ Lesson attendance electronic log in system			
Entering CAT and exams marks electronically			
computation/analysis of results by use of calculator and spread sheets			
Installation of special programs for report card computation			
On-line submission of marks and lesson plans			
Online registration of candidates			
Online extraction of KCSE results from KNEC website and making comparison with the performance of other schools-			
Monitoring and Evaluation in Boarding			
Use of computerized student data base in accommodation and hostel management			
Computerized meal cards/ meals control module			

Monitoring and Evaluation on General security			
Computer serialization of materials in the library and stores/ cataloguing of books			
School vehicles have working speed readers and governors			
Use of hidden microphones, video lenses, corn coder cameras and chips in offices to monitor on-goings (CCTV)			

5. ICT use in Public Relations

a) Put a (√) tick in the appropriate space that corresponds with your response.

Ways in which ICT is used in public relations	Yes	No
The computers in the school are linked to the internet		
The school has a functional e-mail address		
The school has a functional website) address		
The departmental offices in the school are fully networked through phone connections		
Some members of staff are members of social sites like Face book, Whatzap and Twitter.		
Some staff members play interactive computer games		
Classes have their own class web		

APPENDIX B

HEAD OF DEPARTMENT QUESTIONNAIRE (H.O.DQ)

The purpose of the study for which this questionnaire was designed is to evaluate the use of ICT in administration of secondary schools in Bungoma East. All your responses and information will be treated with utmost confidentiality and will only be used for analytical purpose of the study. Please give your view by filling in the blank space or putting a tick (✓) in the appropriate spaces that corresponds with your response from the following aspects related to the use of ICT in administration in your department and in the school as a whole.

SECTION A: BACKGROUND INFORMATION

- ii. a) State your department -----
- b) State the total number of teachers in your department -----
- c) The department has -----computers

SECTION B SPECIFIC INFORMATION

2. Administrative use of ICT in Human Resource Management

i. Use of ICT in Planning

Indicate your opinion about the following use of ICT in the planning of activities in your school.

(Indicate by ticking in the appropriate box)

Use of ICT in Planning	A	U	D
School uses mobile phones to coordinate activities in planning			
Use of computer programs like Excel in budget preparation.			
Use of a special software for timetable making (e-time tabling)			
The school embraces e-conferencing			

ii. Use of ICT in advertisement, recruitment and selection.

Indicate your opinion about extend to which ICT is used in the following areas in the school.

Where A= Agree, U= Unsure, D= Disagree

Use of ICT in Advertisement, Recruitment and Selection	A	U	D
Internet posting/advertisement of vacancies			
Internet recruitment			
Checking computer literacy of interviewee			

iii. Use of ICT in Enrolment, Admission and placement and Induction

Indicate your opinion about extend to which ICT is used in the following areas in the school.

Where A= Agree, U= Unsure, D= Disagree

Use of ICT in enrolment, admission and placement	A	U	D
Admission letters and other circulars are typed and printed/rolled			
Admission is done through Web enabled services (filling Admission forms on-line)			
Data capture and storage of personnel information is done electronically on the computer			
E- placement module/E-allocation of halls and classes			
Members are inducted by exposure to details about the school on school website			

iv. Use of ICT in Communication

Indicate your opinion about extend to which ICT is used in the following areas in the school.

Where A= Agree, U= Unsure, D= Disagree, Indicate your answer by ticking under your preferred choice

use of ICT in communication	A	U	D
Communicating is mostly done through typed letters and other printed modes			
Use of e-circulars/ e.g. e-mailing services			
Use of Phone calls			

Vi. ICT use in staff development, appraisal and motivation

Indicate your opinion about extend to which ICT is used in the following areas in the school.

Where A= Agree, U= Unsure, D= Disagree. Indicate your answer by ticking in your preferred space/box.

use of ICT in staff development	A	U	D
Members are involved in open learning programmes			
School sponsors staff for ICT seminars			
Computer classes for staff and students are offered by the school			

3. ICT use in Monitoring and Evaluation

i) Indicate the extent to which ICT is used in the following areas

(Indicate by ticking the appropriate number where 1= always 2= rarely 3= never)

Areas in which ICT is used				
	Always	Occasionally	Rarely	Never
Academic monitoring and evaluation				
School/ Lesson attendance electronic log in system				
Entering CAT and exams marks electronically				
Computation/analysis of results by use of calculator and spread sheets				
Installation of special programs for report card computation				
On-line submission of marks and lesson plans				
Online registration of candidates				
Online extraction of KCSE results from KNEC website and making comparison with the performance of other schools-				
Monitoring and Evaluation in Boarding				
Use of computerized student data base in accommodation and hostel management				
Computerized meal cards/ meals control module				
Monitoring and Evaluation on General security				
Computer serialization of materials in the library and stores/ cataloguing of books				
School vehicles have working speed readers and governors				
Use of hidden microphones, video lenses, corn coder cameras and chips in offices to monitor on-goings (CCTV)				

4. ICT use in Public Relations

a) Put a (√) tick in the appropriate space that corresponds with your response.

Ways in which ICT is used in public relations	Yes	No
The computers in the school are linked to the internet		
The school has a functional e-mail address		
The school has a functional website) address		

The departmental offices in the school are fully networked through phone connections		
Some members of staff are members of social sites like Face book, Whatzap and Twitter.		
Some staff members play interactive computer games		
Classes have their own class web		

4. Challenges Facing the Administrators in the Use of ICT in Secondary Schools.

Put a (√) tick in the appropriate space that corresponds with your response.

Schools

Challenges	
Facility shortage	
Power failure	
Virus	
Sabotage by staff	
Insufficient skills	
No interest	
Shortage of Finances	

State any other challenges not stated above.

APPENDIX C

QUESTIONNAIRE FOR ACCOUNT CLERKS (ACQ)

The purpose of the study for which this questionnaire was designed is to evaluate the use of ICT in administration of secondary schools in Bungoma East. All your responses and information will be treated with utmost confidentiality and only be used for analytical purpose of the study. Please give your view by filling in the blank space or putting a tick (√) in the appropriate spaces that corresponds with your response from the following aspects related to the use of ICT in administration in your department.

SECTION B SPECIFIC INFORMATION

1. ICT use in administration of finance.

Indicate your opinion about the following use of ICT in your school to manage finances, where A= Agree, U= Unsure, D= Disagree.

Ways of embracing ICT	A	U	D
Use of computerized credit control module			
Availability of automatic electronic fee control module.			
Use of swipe cards/smart cards			
Availability of Computerized budget computation software			
Students are send money through electronic money transfer services like M-Pesa and Zap			
Salary processing and pay slip generation is done on school computer			
Financial records are stored and evaluated on the school computer			
On-line banking			
Back-up financial records are stored on flash disks, CD roles, VCDs and so on			

2. Indicate your opinion about the use of the following computer packages in your financial administration.

Accounting packages are used in financial transaction in this school	A	U	D
Ms Word			
Ms Excel			

Quick book			
Sage			
Any other (specify)			

3. Challenges facing the use of ICT in school administration.

i) What do you perceive to be the challenges of using ICT in this department?

Challenges	A	U	D
Shortage of facilities			
Power failures			
Virus infection			
Lack of power supply			
Sabotage by personnel			
Insufficient skills among some workers			
Lack of interest in computer use among some members			
Shortage of finances to purchase facilities			
Poor management of the facilities.			

APPENDIX D

PRINCIPALS' QUESTIONNAIRE (PQ)

The purpose of the study for which this Interview Schedule was designed is to evaluate the use of ICT in administration of secondary schools in Bungoma East. All your responses and information will be treated with utmost confidentiality and only be used for analytical purpose of the study.

1. How has your school embraced the use of ICT in the following areas
 - i. Human resource management
 - ii. Financial administration
 - iii. Monitoring and evaluation
 - iv. Public relation.
2. What are some of the challenges administrators in this school face in the use of ICT in the school administration

APPENDIX E

Observation Schedule (OBS)

The purpose of the study for which this observation schedule was designed is to evaluate the use of ICT in administration of secondary schools in Bungoma East Sub county. All your responses and information will be treated with utmost confidentiality and only be used for analytical purpose of the study.

List of ICT Related Facilities and Services Found in the Schools

Indicate the number of computer related gadgets found in your school and state the number of the same that is in use. Write in the appropriate space that corresponds with your response.

Computer related gadget	Number available	Number in use
Computers		
Printers		
Photocopiers		
Type writers		
Television		
Radio		
Fax machines		
Projectors		
Landline phones		
Mobile phones		
Video machines		
Microphone		
Flash disks,CDs		
Internet connection		