

**INTERGRATION LEVELS OF INFORMATION COMMUNICATION
TECHNOLOGY IN MANAGEMENT PROCESSES IN SECONDARY SCHOOLS;
A CASE OF KANGUNDO DISTRICT, MACHAKOS COUNTY, KENYA**

BY

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DECLARATION

Declaration by Candidate

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DEDICATION

I dedicate this thesis to my dear parents for their sacrifice for the sake of my education.

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ABSTRACT

The heads of secondary schools have many managerial tasks to undertake. Information and communication technology (ICT) is one of the innovations school administrators are utilizing to make transformation in school management. Use of ICTs in management increases management efficiency. The study was designed to investigate the integration levels of ICT in managerial processes in Secondary Schools in Kangundo district. The study aimed at establishing the extent to which Secondary schools use ICT and whether the same is affected by certain factors. The research design adopted in the study is descriptive survey. The target population was all the 53 Secondary schools in the district. Stratified random sampling technique was used to select 44 schools to act as research sites. The head teachers of the 44 schools formed the sample for the study. The study was based on systems theory. As adapted in this study, the system's theory holds that management actions influence the internal efficiency of a school. The research instruments used to collect data were questionnaires. The data was analyzed both qualitatively and quantitatively. Qualitative analysis involved narratives and comparisons while quantitative analysis comprised of the descriptive statistics: frequency distribution tables, means, modes and percentages. The study found that majority of the schools in Kangundo district had no ICT capacity and also had not in cooperated ICT in management processes. The study findings are expected to be of benefit to school managers and policy makers; in that they can contribute to an improvement in management efficiency. The study recommended that there was need for the Ministry of Education to sensitise school managers on ICT use as a management tool and also that the teacher training curriculum in universities and teacher training colleges should include units on ICT and how it can be employed in classroom teaching and school management as an emerging issue.

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ABBREVIATIONS

AASA	American Association of School Administrators
ASAL areas	Arid and Semiarid areas
CDB	Computer data base
EMIS	Education Management Information System
HOD	Head of department
ICT	Information and communication technology
IDI	Electronic data interchange
ITAA	Information Technology Association of America
MIS	Management information system
MOE	Ministry of Education
SMIS	School Management Information system
STMIS	Student management information system

CHAPTER ONE

INTRODUCTION TO THE STUDY

1.0 Introduction

This chapter covers background of the problem, statement of the problem, purpose of the study, research questions, assumptions of the study, scope and limitations, significance of the study, theoretical frame work, conceptual frame work and definitions of operational terms.

1.1. Background of the Problem

Today is referred to as information age as a result of the many technological developments that have been experienced. The biggest risk that an organization could take is to stay insensitive to change. Many factors such as continuous developments in information technologies, information exchange, increasing expectations of the society, modern managing perceptions and applications cause organizations all over the world to develop new applications in order to survive (Demir, 2006). As Bellum (2003) notes, because of their priorities in modern societies, information technologies have reached a state of priority in education, too. Recently, contributions of ITs to education have been among the most emphasized subjects. Every country aims to provide their citizens with the most contemporary education in line with their financial efficiency. For this reason, big investment plans about the use of information systems have been put into action all over the world. The school as a social technical organization is made up of four subsystems that is: human, technical, and structural and task. The human subsystem is comprised of teachers, administrators and support staff who are typically engaged in tasks

such as delivery of instruction, development of curriculum and evaluation of student progress. The school as an organization must also have technological resources in order to complete tasks and achieve goals. Technological resources may include hardware and software, textbooks, chalk boards and electronic microscopes. It may also include program inventions: systemic procedures, the sequencing of activities, or other procedural inventions designed to solve problems that stand in the way of organizational task achievement (Demir, 2006).

According to Haag et al (1998), one of the innovations school administrators and instructional staff are utilizing to make transformation is school management information system. They define school management information system as “a management information system designed to match the structure management task, instructional processes and special needs of the school. They observe that the introduction of a management information system (MIS) into a school environment can contribute to improved performance, strengthened educational leadership and goal achievement. They further note that schools have historically lagged behind non-educational organizations in the implementation and utilization of MIS. A management information system is designed to match the structures, management tasks, instructional processes, and special needs of the school and provide decision support to the decision system that is a regular part of organizational and instructional management. A comprehensive SMIS manages a school’s key functional data including, but not limited to enrolment, student and staff demographics, course enrolments, class schedules, attendance, disciplinary actions,

special programs, grades, standardised assessments and health information (Dawson, 2001).

A study by Gregorash (2004) noted that SMIS can provide teachers and administrators with the information required for informed planning, policy making and evaluation. In addition, a SMIS can assist in improving the efficiency and effectiveness of schools. It further revealed that effective utilization of an information system depends as much on the strategy for developing the system, the methods for supporting its implementation, and the mindset of its users, as it does the technical attributes of the system itself.

Gene (2003) says that school management information systems have changed school management areas of leadership, decision making, workload, human resource management, communication, responsibility and planning. By means of information systems, school managers are able to determine required information, access the information, interpret the data, use the data in decision making and evaluating and developing efficient use of the system. Researches in various countries confirm that school management information systems increase organizational and managerial effectiveness. After studies with American school managers, Dawson (2001) stated that efficiency has increased in decision making at schools where SMIS are used. Gurr (2000) examined effects of school management information systems on working of primary school managers in Australia, in which managers stated that use of SMIS has introduced them information technologies and facilities, lessened their workload and made management process more efficient, helped them use time more efficiently, made teachers feel themselves more important, made them and the teachers wish to improve

themselves more, made important changes in education and teaching, and increased the quality of school communication. In his study with school managers, (Christopher ,2003) found that school managers believed that school management information systems lead to important changes at school. According to school managers, this application has increased school standards, helped decisions on the level of control and strategy, increased the quality of teaching programs, facilitated student-teacher interaction, increased the coordination between teachers, facilitated systematic and continuous information transfer to parents and increased communication with other institutions and the central organization. A study by Nolan (1996) examined implementation of computerized school information systems and determined that information systems have largely changed roles of school managers. Managers stated that a manager who does not use the information systems is not able to achieve his duties sufficiently any more.

However, there are researches that show that school managers had problems in using SMIS. For example Visscher (1996) in a study with 195 managers and teachers working in 63 high schools in Holland found out that school management information systems were mostly used in routine works and managers and teachers did not have sufficient education on the system. Managers and teachers indicated that while school management information systems had positive effects on evaluation of efficiency of the school, development of using sources, quality of educational programming and in school communication, it increased their workload and caused stress. In addition, it was found that the staff that used SMIS had higher motivation, and adopted the vision of the school more. In the research where Anderson and Dexter (2005) examined the preference and

effect of school technology leadership, they found out that school managers have not taken sufficient education on efficient use of the information technologies. Bellum (2003) found that education increased the possibility to use the information systems. He also found that there was a correlation between the amount of education the managers took, and the use of information technologies.

Communication and information technologies have increasingly played a role on the activities of schools. Although there are many researches on the role of information systems on class and teaching (education), few studies have been done on their use in educational management. Against this background, this study will examine the effects of information communication technology adoption on management processes in Kangundo district secondary schools

1.2 Statement of the Problem

In a school, great responsibilities are put on the shoulder of the head teacher. 'A manual for Heads of secondary schools' (1979) points out that demands are made of the head teacher to have knowledge of office administration, personnel management, educational practice, accounting and building maintenance. Thus this manual recognizes the fact that the heads of secondary schools have many managerial tasks to undertake. Information systems are vital for school management. Beside the many managerial tasks of school heads, many schools still continue to use manual information systems which heavily rely on manual filling.

Such systems are associated with some limitations in that they are time consuming since there is too much paper work, they are space consuming since the data and paper is stored in filing cabinets, retrieval of information is slow since its stored in different parts, and there may be inconsistency of data since some data may get misplaced during manual filling (<http://www.wiki.answers.com/Q> 2009). Such limitations among others lead to inefficiency in school management; where manual information systems are used. According to the Sessional Paper No.1 of 2005 (Republic of Kenya 2005), there is a government policy in place made to promote expanded use of ICT as a tool for effective management. The strategy to be employed in achieving this is, building institutional and human capacity to facilitate use of ICT in education and institutional management in order to improve the efficiency of educational administration and management. The sessional paper also recognizes that there are a number of challenges facing the use of ICT. These include limited rural electrification, high costs of internet provision, costs associated with equipment and inadequate infrastructure and support.

The National ICT policy (Republic of Kenya,2006) recognises the need to promote ICT in education at primary, secondary and tertiary and community levels by developing ICT curricula and ensuring that teachers/trainers possess the prerequisite skills According to the policy, the government recognizes that there is a growing divide between the countries that are endowed and developed in the field of IT as well as rural and urban areas of a country (Republic of Kenya, 2006:6); and has an objective of initiating steps to reduce this divide by using IT to rapidly develop all sectors of the economy. It also has an objective of encouraging the use of IT in schools, colleges, universities and other

educational institutions in the country so as to improve the quality of teaching and learning (Republic of Kenya, 2006).

Researches in various countries confirm that ICT increases organizational and management effectiveness for example according to Gurr (2000), in his study on school managers stated (as cited in Demir 2006) that “a manager who does not use school management information system (SMIS) is not able to achieve his duties sufficiently”. It is against this background that the study was conceived. The study was an assessment of the effects of information communication technology adoption on management processes in Kangundo district secondary schools.

1.3 Purpose of the Study

The purpose of this study was to assess the effects of information communication technology adoption on management processes in secondary schools in Kangundo district.

1.4 Objectives of the Study

More specifically, the study sought to:-

- (i) To establish the ICT resources available in secondary schools in Kangundo district, Kenya.
- (ii) Determine the applications of Information Technology in management processes in Kangundo district secondary schools.
- (iii) To determine the perceived benefits of integrating IT in to school management processes in Kangundo district secondary schools.

- (iv) To identify the barriers to the adoption of IT in secondary school management practices in Kangundo District.

1.5 Research Questions.

- 2 What are the ICT resources available in secondary schools in Kangundo district?
- 3 What are the applications of Information Technology in management processes in Kangundo district secondary schools?
- 4 What are the perceived benefits of integrating IT in to school management processes by in Kangundo district secondary schools?
- 5 What are the barriers to the adoption of IT in Secondary schools' management processes and tasks in Kangundo district?

1.6 Delimitations and Limitations of the Study

This study on effects of information communication technology adoption on management processes in Kangundo district secondary schools was conducted between April 2010 and August 2011. The study was conducted in all the 53 secondary schools in Kangundo District, data being collected by the researcher using questionnaires. The respondents will be the schools' head teachers. The study specifically seeks to determine: The head teachers' perceptions on effect of ICT on efficiency in secondary school management processes, barriers to the adoption of ICT in management processes and tasks, extend of application of IT in management processes and tasks and the ICT resources in secondary schools in Kangundo district. The study was likely to face the limitation of lack of

adequate time and resources; which hindered the researcher from taking the questionnaires in person to all the respondents.

1.7 Significance of the Study

The study will serve the following theoretical and practical purposes: -Future researchers will use it as a source of literature in case of doing a research in either directly or indirectly related areas. In addition, School managers will use the information to improve the efficiency in school management by implementing the use of IT. In addition it will provide an insight to DEOs Office on applications of IT in management. This will increase the level of sensitization on the need to implement IT in school management practices.

1.8 Theoretical Framework

The theoretical framework adopted for this study is derived from the systems theory of organizations developed by Ludwig Von Bertalanffy in the early 1950s (<http://www.pespmc/rub.ac.be/systheor.html>.2009). It emerged as part of the intellectual ferment following World War II although its roots are much older. The systems theory is an alternative to the classical and neo-classical organizations theories which the researcher feels cannot suffice because of their emphasis on schools as fragmented and closed social units independent of external forces (Oso and Onen, 2005). The only meaningful way to study organizations (including a school) is to regard it as a system. Thus schools should be managed more like organizations where educational programs are innovated and re-innovated to realize the importance each part makes to the whole, and

the necessity of eliminating the parts that make negative contributions. Systems theory postulates that schools are like other open systems which of necessity engage in various modes of exchange with the environment (<http://www.pespmc/rub.ac.be/systheor.html>,2009).

The theory emphasizes the consideration of the relationships between the school and its environment as well as what goes on within the school .It is basically concerned with the problems of relationships, of structures and of interdependence, rather than with the constant attributes of objects (<http://www.pespmc/rub.ac.be/systheor.html>,2009). The fundamental concept in the general systems theory is the notion of emergence and interaction.

As adapted in this study, the systems theory holds that management actions influence the internal efficiency of a school (Oso and Onen, 2005). Thus the way in which the managerial functions control, staffing, communication, planning, organizing, decision making and coordination are executed influences the achievement of school's goals.

1.9 Conceptual Framework

The use of information technology can influence the way in which the managerial functions control staffing, communication, planning, organizing, decision making and coordination are executed. This in turn can influence the achievement of the overall goals of the school. The conceptual framework for the above relationship which will guide the study is as shown below

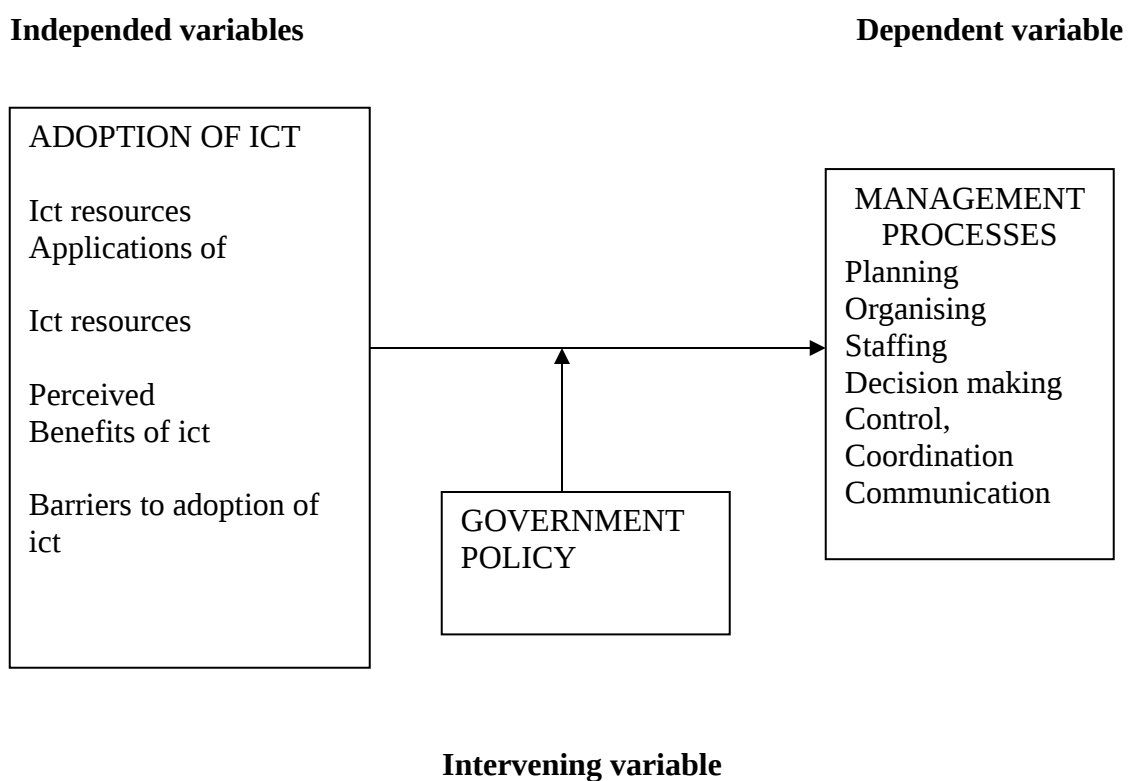


FIG 1.1

A conceptual framework showing the relation shop between effect of ICT and managerial practices.

1.10 Operational Definition of Terms.

- Head teacher : The chief executive of the school also called Principal in a secondary school
- Teacher : Anybody who has proceeded beyond secondary education; with or without professional training who is teaching in secondary school under supervision of the head teacher.
- Information communication Technology : A branch of technology that involves use of computers and computer software to input, process, store, retrieve, transmit and receive data and information.
- Management processes: The day to day activities such as planning, organizing, staffing, directing, coordination, communication, controlling and decision making undertaken by the school management; made to achieve the school goals and objectives.

CHAPTER TWO

LITERATURE REVIEW

2.1 Introduction

This chapter reviews literature related to the integration of Information and Communication Technology in management tasks and processes. The chapter is divided into seven sections: Definition of Information and Communication Technology, Applications of Information and Communication Technology (corporate world and educational institutions). Use of Information and Communication Technology in Africa, Barriers to establishment and management of information and communication technology in developing countries, Management practices in schools in relation to ICT and Administrative task areas.

2.2 Definition of Information and Communication Technology

Information technology as defined by (Lan, 1997) as the “Study, design, development, implementation, support or management of computer based information system particularly software application and computer hardware. Encompassing the computer and information systems industries, information technology is the capabilities to electronically input, process, store, output, transmit and receive data and information including text, graphics, sound and video as well as the ability to control machines of all kinds electronically”. IT deals with the use of electronic computers and computer software to convert, store, protect, process, transmit and securely retrieve information.

Oloo (2009) defines information technology as “the branch of technology concerned with the dissemination, processing, and storage of information especially by means of

computers”.Tusubira (2001:123) defines information technology as “The hardware, the software, the methods, and the know-how required or used in acquiring, storing, processing and displaying data and information”.

Talero (1996:85) defines ICT as the infrastructure that brings people together in different places and time zones with multimedia tools for data, information, and knowledge management in order to expand the range of human capacities. O’Brien (2001) defines ICT as the various technologies that enhance the creation, storage, processing, communicating and dissemination of information. It also refers to the different infrastructures used in these processes, their applications and numerous services these infrastructures render. In a nutshell, ICT refers to the electronic means of capturing, processing, storing and communicating information.

2.3 Applications of Information Technology in Organizations(Corporate world and Educational Institutions)

2.3.1 Use of ICT in Communication and collaboration in an organisation

In organisations, there is need for all the different sections or branches to communicate with one another. For instance according to Adeosun etal (2009), in banking operations there is a critical need for all branches of a bank to communicate with each other and with other branches of other banks effectively and efficiently. The use of ICT in banking sector serves two important needs. These are: the need to support staffs who are working together in the same bank and those working at dispersed branches cum other banks and the need for better, faster and cheaper communication among individual bank (intra bank)

and other banks (inter bank).According to Allen and Morton (1994) , poor communication channels within an organization results in weaknesses in the procedures for disseminating new technologies within an organization .It is also a primary, source of resistance to technology. Collaborative work is a feature of modern day technology in computing (Adeosun etal, 2009).Major decisions in banking industry for instance; are made by groups of people working in a collaborative manner from remote locations. There are soft ware products that have been developed to support groups of people in different locations engaged in a common task or goal. These soft ware products are known as groupware. They provide a mechanism to share opinions and resources. Examples of such groupware that aid in the collaborative efforts of organizations include teleconferencing, video teleconferencing e-mail and electronic data interchange (I.DI) .

Teleconferencing is an ICT for the collaborative efforts of different parties in different locations (Adeosun etal 2009).It cuts costs of traveling and eliminates risks of such trips.

Electronic mail (e-mail) is a multiple access communication which allows sending of letters to any one connected to the system .The advantage of e-mail include: ability to send messages to many users in a very short time, ability to trace correspondence (who Sent who and when) and ability to work with others on the same task. (Webster, Frank, Robins, Kevin 1986)

Electronic data interchange (EDI) can also be used to support communication in organizations e.g. within branches of a bank EDI enables the sending and receiving of messages between computers connected by an electric link such as a telephone line or electromagnetic technology.

The applications said above can also be extended to secondary schools.

2.3.2 Use of ICT in Managerial Decision Making

The success of management depends on the execution of management functions such as planning, organizing, directing and controlling. Information is needed for decision making. In fact, it is a vital organ in decision making. As a matter of fact, it is impossible to make decisions without information (May 2003:56). Making decision from manually processed information in organizations is becoming increasingly difficult due to the following trends:

Many decisions must be made within time limit, most of time it is not possible to manually process the needed information within the stipulated time and manually processed information is usually characterized by uncertainty in the decision environment; it is thereby recommended that a sophisticated analysis using electronic means be used to make a good decision.

The above challenges of manually processed information have led to adoption of ICT in many organizations, including schools.

2.3.3 Use of ICT in data Management

Organizations are increasingly dependent on information. They must be able to get the information as at when needed, where it is needed and in the form in which it is needed . To get complete and useful information, data must be well organized, stored and managed. The modern approach to data in organizations is a data base (Haag, Cummings and Dawkings, 1998).

According to O'Brien (2001), a data base is an integrated collection of logically related records. In it data are integrated and related so that one set of software program provides

access to all data. In database, data redundancy is minimized, data can be shared among users and data inconsistency is minimised. Thus a school management that has established a data base will derive the said advantages from its use.

2.3.4 Use of ICT in Knowledge Management

According to Adeosun (2009), banks are interested in three critical aspects as they map their knowledge activities to sharply defined strategic goals. These include innovation, responsiveness and competency. ICT is being employed in these aspects. Innovation involves finding and nurturing new ideas, bringing people together in virtual development teams, creating fora for brain storming and collaboration. Here various types of groupware are used. Responsiveness involves giving people access to information they need when they need it, so that they can solve customer problems more quickly, make better decisions faster and respond more quickly to changing market conditions. Here the intranet, extranet and the internet are being used.

Competency involves developing the skills and expertise of employees through on-the-job training and distance learning. Here multiple applications, virtual reality and the internet are being used (O'Brien, 2001).

2.3.5 Use of ICT in Strategic Management

Strategic Management information systems support the long-range planning activities in organisations. Such systems help the management to tackle and address strategic issues and long term trends, both in the organization and in the external environment. There principal concern is matching changes in the external environment with existing

organizational capability for example: what will employment levels be in five years? What products should we be making in five years and what is the long term industry cost trends. Thus these systems can be helpful to managers (including school managers) in profit planning, man power planning, budget for casting and operating planning e.g. making 5-year operating plan Nolan ,1996).

2.3.6 Use of ICT in Maintenance of Employees' Personal Records

Information technology can be applied to store and maintain all the personal details which an organization may need for its employees for example: contacts and addresses, qualifications, special skills and competencies, training, discipline, medical history, etc (Armstrong 2001:883).In a school set up, management can store such data for all their staff for easy accessibility its required.

2.3.7 Use of ICT in Recruitment

According to Armstrong (2001:887), a recruitment information system can carry out the tasks: -storage of applicant's details, retrieval and amendment of those details, letter writing (linking the system to word-processing facilities), acknowledgements, and invitations to interviews, offers and rejections and matching CVs to person specifications for short listing purposes. Thus school managements can establish such an information system for facilitating the recruitment purpose during employment of new staff in the school.

2.3.8 Use of ICT in Staff Absence Management

Armstrong (2001) says that absence control can be carried out with the help of computer based time recording and attendance systems which: -record clocking on or out time and hours actually worked, enable employees to record the time spent on particular jobs and get employee to explain the reason for late arrival, early departure, or any other absence

An implementation of such a computer based absence control system by school management can be of great help in controlling school employees' absence.

2.4 Adoption of Information and Communication Technology in Africa

According to Adeya (2001) a survey on the use of ICT in Africa has revealed that the use of ICT is growing despite the many constrains. There is a considerable variation between different African countries on the adoption and use of these technologies, ranging from the fairly advanced status of South Africa to the relatively undeveloped status of Somalia. The constrains of ICT development in Africa have been found to include: - Lack of infrastructure, absence of ICT policy or its implementation, few trained or skilled ICT personnel, poor knowledge of ICT and financial constraints. Despite these constraints, there have been successful applications of ICTs in different sectors in many African countries including banking, education, air travel, software development and the provision of health care. Further appropriate development in ICTs in Africa could improve communication, access to information, research, distance learning and teacher education (Adeya, 2001).

2.5 ICT in Secondary Schools and Educational Institutions in Kenya

According to Oloo (2009), a survey carried out in 2008 in selected secondary schools in all provinces to determine the current use and attitude towards ICT in Kenyan schools revealed that: majority of teachers were ill equipped to effectively integrate ICT in the schools' teaching and learning environment. He noted that the main challenge for teachers was lack of adequate number of computers, educational applications, training, policy and strategy on how integration of ICT should be done. All schools felt that they did not have adequate funding to purchase ICT equipment and would consider buying them for administrative purposes. School administrators recognized the need for the in-cooperation of ICT in school administration and other activities. He further noted that a number of ICT initiatives have been launched in the recent past to improve teaching and learning in education sector by government, entrepreneurs and some through joint programmes carried out by private and public sector consortia. Some of the initiatives have been successful while others have failed.

Most schools acquire computers either through donation or school fund. Most donations are from government funds or from non governmental organisations (NGOs). He found that there was a wide range of use of computers in the schools surveyed. Administrative use and examination processing were the most frequent followed by teaching of basic computer skills. A few schools had purchased school management software which was used with varying success. Most felt unsupported with lack of training on use of management software. A previous study by Kinyanjui and Nderitu (2005) through UNESCO noted the value of ICT integration in education. They explained that

integration involves the fusing of both technology and pedagogy in different measures that allow for students' exploration during learning. As such, the government encouraged the private sector to assist in the promotion of ICT in secondary schools (Wafula & Wanyonyi, 2007). This led to a number of bodies financing ICT in public schools. Okutta (2007), Krige and Okono (2007), and Wangari (2008) noted that the financing partners included Computer for Schools Kenya, Kenya Education Network, the ICT Trust Fund, and NE-PAD. Geisert and Furtell (2000) pointed out that ICT is useful in the teaching process, while Sadker and Sadker (2000) all reported that the other ICT application areas in education were administration, record keeping, computer literacy, education research, assistive technologies, and a source of employment. At the same time, Shrum and Dehoney (1998) noted that teachers who were computer literate used the technology to publish their work, create videos, de-sign portfolios, communicate, and develop professionally through the use of the Internet.

Despite the potential of technology, Tilya (2007) reported that the main factor affecting ICT application areas in a school was leadership. Education Insight ("ICT set up in schools," 2006), Okuogo (2006) and Wangari (2008) highlight other factors affecting use of ICT in a school as high cost of equipment, teachers' ICT literacy status, school ICT policy, type of sponsor for the programs, and the hardware available in a school. The other important factor that hinders the implementation of technology is lack of trained man-power. Tilya (2007) stated that the development of any country depends very much on the level of education of its citizens. Batchelor and Nocrish (2005) explained further that many governments were using the introduction to ICT as a way of providing teachers

with new skills and introducing new pedagogy into the classroom. Information and communication technology (ICTS) have the potential to increase the availability educational materials and management processes and tasks. Their interactivity and global reach allow for customized sharing of knowledge, materials and databases, quickly and cheaply over long distances. Integrating ICTs in secondary schools requires a strategy for the pedagogical integration of ICTs in teaching and learning and management processes and tasks (Tilya, 2007).

2.6 Barriers to Establishment and Management of Information and Communication Technology in Developing Countries

2.6.1 Financial Constraints

Developing countries often lack the initial allocation as well as matching funds to make feasible investments in ICTs. Many countries often acquire costly technology without making provisions for building sufficient infrastructure to run them. Most developing countries are constrained by resource scarcities. Hedberg, Harper, Bloch and College (1992:102) say that: “even where the importance of ICTs is recognized, allocation for the development of these is at best paltry, Due to this, many developing countries are forced to depend on mostly traditional means of communication; which are limited in their efficiencies”.

2.6.2 Technological Factors

Handling of new technology requires care and technical proficiency. For this training is an important aspect. Many developing countries lack enough personnel to train man

power in new technology such as ICT Adeya (2001:58). More over, constant retraining of manpower to acquaint them with changing technology is also important. These often act as constrains before the smooth growth of ICT . In African countries, there is a reduced capacity for maintaining ICT networks and other hardware; which limits use of ICT Ian (1997).

2.6.3 Cultural Factors

Although information and communication technology has been widely adopted in developed countries, in developing countries it is still a new technology being adopted at varied degrees in different countries Adeya (2001:61).It has been observed that in these countries, manual means of data keeping have been used for a long time; to an extent that in some organizations manual data keeping has become the ‘culture of storing data’. This has led to resistance to adopt ICT in some organizations since people have become used to manual systems of data keeping and semi-manual means of data processing.

2.6.4 Lack of a Proper ICT Enabling Environment

ICT enabling environment includes ICT-specific regulatory framework (for example an ICT policy) policies which favour low cost of ICTs, electricity supply and transport. Such an enabling environment as above is poor in most African countries and this limits the development of ICT. Most of the infrastructure e.g. electricity supply and good transport is concentrated in few major urban centres and poor in rural areas ; despite the fact that most of the population lives in rural areas. This limits ICT adoption in rural areas (Hedberg, Harper, Bloch and College, 1992:105).

2.6.5 Human Capacity

In many African countries, illiteracy levels are very high. This becomes a major obstacle to the spread and use of ICT. To ensure that the public can effectively use ICT, there is a need for African governments to invest in education at all levels – basic, secondary and vocational (Ian, 1997)

3.9.1 Lagging Internet Applications and Content

Gerster 2008 says (as cited in Munyua, 2000) that lagging internet applications and content in Africa has retarded development of African internet sites. Although growth of internet sites located in African in 2006 was much higher than the worlds average, Africa, home to 14 percent of the world’s population still accounts for only 13 percent of global activity in the internet, with a total of one and a half million hosts, as compared to 88 million in Europe, 42 million in Asia and 18 million in Latin America (Munyua, 2000:125). Beside the lack of local content, limited web development capacity and low awareness of the value and uses of a web-presence has contributed to the limited sophistication and utility of many local websites. In addition, Africa internet domains may not be seen as more reliable or as credible as international internet domains and they are usually more expensive to purchase (Munyua, 2000:113).

2.7 Kenyan Education Policy on Information Technology

2.7.1 Introduction

The government appreciates and recognizes that, an ICT literate work force is the foundation on which Kenya can acquire the status of a knowledge economy. Against this

background, the government aims to make education the natural platform for equipping the nation with ICT skills in order to create a dynamic and sustainable economic growth. (Sessional paper No. 1 of 2005). The government formulated a national information and technology policy. A number of international organizations have developed, or started developing partnerships with MOE to facilitate the use of ICT in government offices and educational institutions (sessional paper No. 1 of 2005).

2.7.2 Ministry of Education's Policy on ICT

According to the sessional paper No1 of 2005:79-83, the ministry's policy on ICT is to integrate ICT education and training into education and training into education and training systems in order to prepare the learners and staff of today for the Kenyan economy of tomorrow and therefore enhance the nation's ICT skills. To address these needs, the government plans to: -Promote expanded use of ICT as a tool for effective management, research and development, at all educational levels and use of internet for education, training and research, Work with stakeholders to develop a strategy on ICT that addresses its use in all educational institutions and neighbourhoods, incorporating access, content, training of teachers and supply of ICT to the institutions, Promote public and private sector investments in ICT within education and training sector and Provide computers to primary, secondary schools and teachers training colleges.

To implement the above policies, the Government is to employ the following strategies: -Facilitate universal excess to ICT infrastructure, which is power, equipment and improved connectivity in all institutions of learning in both the formal and non-formal education sectors, including affirmative action for gender, ASAL areas, rural and urban-

poor schools as well as those of special needs, Establish an interactive website and e-mail communication channels to and within MOES & T and outside the ministry, Develop a project under the rural electrification programme that will help access power to educational institutions to facilitate wider use of ICT , Review of the telecommunication policy to support education, for example preferential treatment of education and training institutions,

Establish controls at all levels of ICT integration to avoid abuse of school-based ICT system and ICT related crimes through incorporation of appropriate security measures in ICT infrastructure and content within data networks, and establish standards by correctly balancing user privacy and the protection of community values ,establishment of and recognition of cyber laws within Kenya's legal framework, Develop sufficient capacity for the development and utilization of both computer hardware and software, Develop a national capacity for curricula design in all education and training sub sectors to facilitate the use of ICT in service delivery so that access to quality education services for learners at all levels of the education system is improved ,Build institutional and human capacity to facilitate the use of ICT in education and training and institutional management in order to improve the efficiency of educational administration and management at every level from the classroom through to the school sector as whole, Provide teachers and education sector managers with access to information and tools to enable them to better deliver educational services, Develop capacity for computer assembly, and development of software to support e-learning and Develop modalities for cost-reduction for ICT equipment and services.

The above policies and strategies have been supported by the National Information and Communications Technology (ICT) policy (2008). An examination of the above strategies reveals that the MOE supports the adoption of ICT in schools for various functions, one of which is in school management.

2.8 Management Practices in Schools.

2.8.1 Introduction

Secondary schools comprise students, teachers, community members, leaders and educational authorities. The objective of school management should therefore be; to work with stakeholders in the school in order to accomplish set educational goals and objectives.

2.8.2 Definition of Management, Administration and Related Functions

There are many definitions of management. Rao and Bajaj (2004) define management as “working with and through individuals and groups to accomplish organizational goals or objectives”. Diwan (1998) defines management as “The art of creating an environment in which people can perform as individuals and yet cooperate towards attainment of group goals”. The above definitions are applicable in schools; whereby the different individuals such as teachers, students and support staff in a school should be made to work together to achieve the school's objectives. In this context, school heads are managers.

Administration is “The total of the processes through which appropriate human and material resources are made available and effective for accomplishing the purposes of an enterprise (Diwan 1998)

2.8.3 Management Functions

All managers have to perform certain functions in an organization to get things moving. But there is no complete agreement among experts on what functions should be included in the management process. The five mostly widely accepted functions of management are: - planning, organizing, staffing; directing and controlling. These have been given by writers such as Diwan (1998), Rao and Bajaj (2004), Olembo, Wanga and Karagu (1992). The above processes have also been referred to by some writers as administrative processes e.g. Olembo, Wanga and Karagu,1992:57). Other management functions given by other writers (as cited by Olembo, Wanga and Karagu (1992:57) include: Reporting, Budgeting (Gulick 1937), allocating, evaluation (AASA 1955) Decision making, communicating and programming (Litch Field, 1956). ICT is one tool that can increase the efficiency with which the above functions are executed. The researcher therefore feels that its important to study the extend to which they have been integrated in school management practices in Kangundo district secondary schools.

2.8.3.1 Planning

Planning is an activity that involves attempts to for cast the future and prepare for it (Olembo, Wanga and Karagu 1992). Rao and Bajaj (2004) define planning as “The process of making decisions about the future. A school head involved in planning is expected to identify the objectives of his particular school and lay out alternatives for achieving these objectives (Olembo, Wanga and Karagu, 1992). Planning is a function of all administrators at the national, provincial, district, divisional and zonal levels. At the national level, long-term plans are made by the various departments in the Ministry of Education regarding educational policies and objectives, examinations, certification,

postings, transfers and promotions of teachers as well as syllabuses for schools and colleges. At the provincial level, the provincial director of education officer and other personnel in his office are responsible for carrying out these policies and adapting them to the needs of particular provinces. At the district, divisional and zonal levels, the District Education Officer, Area primary school inspectors, assistant primary school inspectors and school heads are responsible for coordinating the various activities related to national educational policies and objectives. The master timetable and class timetable are examples of short-term planning within individual schools and colleges. The five year development plans are examples of long term plans of educational policies and objectives. A school head is responsible for supervising and evaluating the extent to which policies, objectives, activities and events laid down in the long and short term plans are successfully carried out. ICT can be employed in time tabling. Changes are constantly being made in school time tables and master plans. If such plans have been constructed using a computer system, it will be easier and convenient to effect the changes compared to if the plans are made manually.

2.8.3.2 Organising

Organising involves placing parts of an organization, whether human or material, in certain relationships to each other, such that there is order in doing things and in organizing the authority existing in the organization (Olembo et al: 1992). At the organizing stage, a school head according to Olembo et al (1992) faces the task of: allocating subjects to various departments (division of labour), ensuring that heads of these departments have allocated the teaching load fairly to each member of staff

according to each member of staff according to their qualification and areas of specialization and coordinating the teaching of each subject in each class to avoid any clashes in timing various activities or overloading any particular class or teacher with work. Effective organizing must attempt to reflect realistically what goes on in the school and who actually does what job. ICT can be used to represent the structure of the various departments in the school; that clearly shows the hierarchy of personnel and their responsibilities. This will make it convenient to monitor the execution of duties by school managers as it presents who is responsible for what. Such a structure makes it easy to show any changes made in the department operations.

2.8.3.3 Co-ordinating

Where as organizing involves placing the parts of an organization in certain relationships to each other, the co-coordinating process requires that the parts so placed be maintained and interrelated for the harmonious operation of the school such that the various parts or departments work as a whole (Olembo etal, 1992) .Co-ordination and supervision are interrelated. For each department created in an educational institution, be it administrative or academic a supervisory role is created for the head of department who must liase with the head of the institution as the overall supervisor and co-ordinator of the activities of the institution.

2.8.3.4 Communicating

Diwan (1998) defines communication as “The process of passing information from one person to another. It’s the process of importing ideas and making oneself understood by

others”. Information must be transmitted from lower to higher levels. Administrators must be able to communicate with others both within and outside the organization. More than this, they must be able to establish communication channels so that there is communication where it is needed. This implies the need for horizontal and upward as well as downward communication. In a school context, there should be communication channels for communication between head teachers, teachers, bursar, clerks, cooks and pupils. ICT can be employed in communication through use of email, in which allow for conveyance of the same message by school managers to several staff through their email. Such message is more individual than group messages and makes the staff more responsible to the message passed.

2.8.3.5 Staffing

Rao and Bajaj (2004:33) define staffing as the process by which organizations meet their human resource needs. It includes not only the movement of individuals into an organization, but also their movement through (promotion, job rotation, transfer) and out (termination, retirement) out of the organization. In a school context, staffing includes sub functions such as: -recruiting (the process of attracting the maximum number of applications for a particular job), Selection (choosing the most suitable candidate among those who apply or those eligible for promotion) and training to improve skills and performance of staff. The sub functions of staffing are among the others given by Diwan (1998). In a school setting, ICT can be employed in staff training through e-learning programmes which don't necessarily require movement of staff to the training grounds. This saves time. The school managers can make arrangements with the in-service training

institutions for such programmes for its staff such as the manager himself, the HODs, teachers and support staff such as bursars, lab technicians and cooks.

2.8.3.6 Directing

Diwan (1998: 270) defines directing as “Telling people what to do and seeing that they do it to the best of their ability”. It includes making assignments, seeing that mistakes are corrected, providing on the job instruction and issuing orders. It also involves communicating and providing leadership to the subordinates and motivating them to contribute to the best of their capability for the achievement of organizational objectives.

The scope of direction is very wide. It includes all those activities which a manager undertakes to influence the actions of his subordinate and achieve goals. Bajaj and Rao (2004: 355). They continue to say that directing consists of :- issuing orders and instructions by a superior to his subordinates (communication); guiding ,advising and helping subordinates in the proper methods of work (leadership),motivating them to achieve goals by providing incentives, good working environment, etc (motivation) and supervising subordinates to ensure compliance with plans (supervision).The school managers can incorporate ICT in directing staff through sending individual staff directions to their e-mail addresses.

2.8.3.7 Controlling

Controlling refers to “The checking of current performance against predetermined standards contained in the plans, with a view to ensuring adequate progress and satisfactory performance (Diwan 1998). It involves verifying whether everything occurs in conformity with plans adopted, the instructions issued and the principle established. Its

objective is to point out the weakness and error in order to rectify them and prevent occurrence. Control helps in keeping the organizational activities on the right path and aligned with plans and goals. In controlling, performances are observed, measured and compared with what had been planned. If the measured performance is found wanting, the manager must find reasons and take corrective actions. If the performance is not found wanting, some planning decisions must be made, altering the original plans. Thus, controlling includes four things: -setting standards of performance e.g. for teachers, students and support staff, measuring actual performance e.g. for teachers and students, comparing actual performance against the standard e.g. for teachers and students and taking correction actions to ensure goal accomplishment.

2.8.3.8 Decision Making

Whatever a manager does, he does through decision making (Diwan, 1998). Decision making is a mental process. It is a process of selecting of one best alternative for doing a work. Olembo etal (1992) say that the day to day running of any school involves numerous tasks in decision making eg,when to call a parents meeting, where to get money for a specific project, how to curb absenteeism in the school, how to allocate resources fairly, and so on.Diwan (1998:252) outlines the following as the characteristics of decision making: intellectual activity, process of selection, an element of commitment, evaluation of alternative, decision is always result oriented, principle of alternative, principle of limiting factors and principle of participation. Decision making relies heavily on data. A computer system provides a convenient means of having all your data kept in the same place; which allows easy access to it when required. Thus by having all relevant

data well kept in a computer system, school managers can easily access it whenever its required for decision making.

2.9 Administrative Task Areas

2.9.1 Introduction

The processes of management are carried out within specified areas of operation in a school setting. These task areas (activity areas) define the tasks that an educational administrator performs in applying the administrative processes. According to Olembo etal (1992:70) the task areas identified by most writers are: -curriculum and instruction, pupil personnel, staff personnel, school community relations, provision and maintenance of physical facilities and financial management (including budgeting, accounting and record keeping).

2.9.2 Administrative Tasks Within each Task Area

According to Olembo, Wanga and Karagu (1992), the school head and other educational administrators at various levels carry out varying tasks in each of the above task areas.

These are outlined in the table 2.1 below:

Table2.1 Administrative Tasks Within Each Task Area

Task Area	Administrative Activities
Curriculum and Instruction	<ul style="list-style-type: none"> • Determining goals and purposes • Designing and developing courses • Organising learning activities • Promoting changes and improvements in curriculum and innovation • Supervising teaching and learning activities
Pupil personnel	<ul style="list-style-type: none"> • Administering admission and attendance services • Organising classes • Maintaining pupil records • Reporting pupil progress • Guidance and counseling • Maintaining pupil discipline • Supervising pupil activities
Staff Personnel	<ul style="list-style-type: none"> • Establishing training and certification guide lines • Recruitment and selecting staff • Induction of new teachers • Training of staff • Organizing in-service • Maintaining good staff relations • Supervising teaching and non teaching staff •
School – Community relations	<ul style="list-style-type: none"> • Planning the amount and nature of school community contact • Explaining the school to the community and vice versa • Co-ordinating school activities with those of other agencies to avoid conflicts • Integrating school interests with those of other

		<p>community groups</p> <ul style="list-style-type: none"> • Receiving community reactions to school programmes and activities and vice versa • Supervising and evaluating the effectiveness of school – community contacts and projects
Physical facilities	<p>6</p> <p>7</p> <p>8</p> <p>9</p> <p>10</p> <p>11</p>	<p>Determining space needs</p> <p>Providing required needs</p> <p>Operating and maintaining facilities</p> <p>Supervising use of facilities</p> <p>Providing supporting services and materials e.g. health, transport, food etc</p> <p>Supervising support services</p>
Financial Management		<ul style="list-style-type: none"> • Determining needs and means of acquiring the needs • Acquiring financial resources • Establishing policies for distributing funds • Preparing budgets • Translating funds into programmes • Managing the budgets • Accounting and record keeping procedures • Supervising allocation and use of funds • Implementing evaluation and supervisory mechanisms

Source : Olembo, Wanga and Karagu (1992)

The incorporation of ICT by school managers in executing the above tasks can greatly increase the efficiency with which they execute them. This will improve their overall management efficiency and hence service delivery to the various stakeholders of their schools.

2.10 Summary

As it was found in the literature review, ICT can be put in a wide range of applications in schools' management processes of communicating, decision making, control, planning, organizing, coordinating and staffing. It was also found that there are several barriers to the adoption of ICT in developing countries .These include financial constrain, technological factors, cultural factors and human capacity. Further to this, Kenya was found to have an education policy on ICT. Menjo (2005) carried out a simmlar research in Nandi north district while Oloo (2009) carried out a similar study in selected schools in all the provinces in Kenya.Menjo focused on the experiences of secondary school administrators and teachers on application of ICT to school administration; while Oloo focused on the current general use and general attitude towards ICT in Kenyan secondary schools. The two studies did not focus on the extent to which ICT has been in cooperated in management processes. Makau (1990) also carried out a closer study on computers in Kenya's schools; which was general in nature. Muriithi (2005) also carried a study on a Framework for Integrating ICT in the Teaching and Learning Process in Secondary Schools in Kenya. His study only focused on incooperation of ICT in teaching . This study fills the knowledge gap that has been left by researchers on the integration levels of ICT in secondary schools' management processes.

CHAPTER THREE

RESEARCH DESIGN AND METHODOLOGY

3.1 Introduction

This chapter presents the methods used to achieve the study objectives. It entails research design, the study area, sample, sampling procedure study population, instruments of data collection and data analysis.

3.2 Research Design

The research adopted a descriptive survey design. According to Kothari (2004:120), descriptive studies are concerned with describing, recording, analysing and interpreting conditions that either exist or coexisted. The researcher does not manipulate the variable or arrange for events to happen. Surveys are only concerned with conditions or relationships that exist, opinions that are held, processes that are going on, effects that are evident or trends that are developing. They are primarily concerned with present but at times do consider past events and influences as they relate to current conditions. Thus in survey, variables that exist or have already occurred are selected and observed. Since this study involved searching for information from head teachers on current use of ICT in management tasks and processes, a descriptive survey was the most appropriate design.

3.3. The Study Area

This study was conducted in secondary schools in Kangundo District of Eastern Province. Kangundo District is one of the districts that were hived off from the larger Machakos District. Administratively, the District is divided into four divisions, that is Kakuyuni, Kangundo, Matungulu and Kyanzavi. Educationally, the District is divided into five zones, that is zone A, B, C, D and E all under the Area Education Officer. The District has fifty three secondary schools of which 30 are mixed public schools, 14 mixed

private, 5 Girls' public, 3 Boys' public, 1 Boys' private and 2 Girls' private schools (DEO Kangundo district).

3.4 The Study Population

The target population was all the 53 head teachers of the 53 secondary schools in Kangundo District. Head teachers were the key respondents since they are the school managers and only delegate their duties to deputy head teachers, heads of departments and teachers.

3.5 Sample and Sampling Procedures

From the target population of 53 secondary schools, stratified random sampling was used to select 44 schools to act as research sites. This figure was determined from the table for determination of sample size for a given population, given by Krejcie and Morgan (1970). According to Krejcie and Morgan, in a total population of 53 individuals, a sample of 44 would be ideal to enable the researcher make inference to the population based on the findings obtained from the sample. The schools were divided into three different strata namely: provincial, district and private schools. Out of the 53 schools, there are 7 provincial, 29 district and 17 private schools. To get a proportionate sample, the researcher used the formula: -

$$S = n/p \times m$$

Where

S = sample size

n = number of schools in each stratum.

P=total number of schools in the area of study

Thus the sample would comprise of 14 private, 24 district and 6 provincial schools.

Table 3.1: Sample size

School category	Population	Sample
Provincial	7	6
District	29	24
Private	17	14
Total	53	44

Simple random sampling was also be used to select the 6 provincial, 24 district and 14 private schools. This involved writing the names of all the schools in each category on separate pieces of papers, folding the papers, then asking people equivalent to the number of schools required in each category to randomly pick the papers. All the 44 head teachers were selected to participate in the study. Thus in total there were 44 respondents.

3.6 Research instruments

The researcher used questionnaires as the tool of data collection. The selection of this tool was determined by the nature of data to be collected, the time available and objectives of the study. Questionnaires were designed for head teachers. The questionnaires comprised of four sections. These were: Section A –Demographic information, Section B- Schools' ICT capacities, Section C – Extend of use of ICT in management practices and Section D – Perceived benefits of use of ICT in management Processes. The researcher then took them to each principal of the selected schools and requested him or her to fill it. The target population was also literate and was unlikely to have difficulties responding to questionnaire items.

3.7 Validity

Validity refers to the degree to which results obtained from analysis of the data actually represent the phenomena under study (Mugenda and Mugenda, 1999).The researcher first undertook a face validity test. This type of validity establishes whether the measuring

instrument looks like its measuring the correct characteristics (Gaur and Gaur 2006). The study instruments were shown to the actual subjects and experts in the Department of Educational Management and Policy Studies in Moi University. In addition, the researcher also did a Content validity test. This refers to the extent to which a measurement reflects the specific intended domain of the content (Gaur and Gaur 2006). To establish content validity, the researcher first defined the entire domain of the study and then with the assistance of experts assessed if the instrument to be used truly represented this domain. The assessment was done against the objectives for the study. Experts' suggestions formed the basis for revising the questionnaire to be in line with the objectives of the study before piloting was done.

3.8 Reliability

Reliability refers to a measure of degree to which a research instrument yields consistent results or data after repeated trials (Mugenda and Mugenda, 1999:95). Reliability of the instruments was checked through internal consistency technique. In this approach, a score obtained in one item is correlated with scores obtained from other items in the instrument (Mugenda and Mugenda, 1999:99). The researcher conducted a single test to a sample of four subjects not selected for the study. Cronbach's Coefficient Alpha was then computed to determine how items correlate among themselves. Cronbach's Alpha is a general form of the Kuder-Richardson (K-R) 20 formula. The K-R 20 formula is as follows:

$$KR_{20} = \frac{(K) (S^2 - Es^2)}{(S^2) (K-1)}$$

Where,

KR_{20} = Reliability coefficient of internal consistence

K = Number of items used to measure the concept

S_2 =Variance of all scores

Es_2 =Variance of individual items

A correlation coefficient of 0.8 or more implies a high degree of reliability of the data that is, there is consistency among the items in measuring the concept on interest.

3.9 Data analysis Techniques

Information collected through the questionnaire was coded and scored. The data analysis was through both qualitative and quantitative analysis techniques. The analysis techniques consisted of calculations of frequency distribution and percentages, means and standard deviations. During the analysis, data was grouped according to the research questions. Qualitative data was analysed through themes, narratives and comparison while quantitative data was analysed through frequency tables, means and percentages.

CHAPTER FOUR

DATA PRESENTATION, ANALYSIS AND INTERPRETATION AND DISCUSSION

2.10 Introduction

This chapter presents the analysis, interpretation and discussion of the data generated from the questionnaires. Questionnaire return rate refers to the total number of questionnaires that were returned from the respondents who participated in the study. Forty four secondary school head teachers formed the sample of this study and out of the respondents, 30 head teachers returned the questionnaires, translating to 68.2 percent. The high return rate can be attributed to constant follow-up calls that were made to the respondents. In addition, the assurance of confidentiality made many principals to respond without reservations and fear of being victimised. Data is presented in both descriptive and tabular form according to the research objectives; which were:

- i) To establish the ICT resources available in secondary schools in Kangundo district, Kenya.
- ii) Determine the applications of Information Technology in management processes in Kangundo district secondary schools.
- iii) To determine the perceived benefits of integrating IT in to school management processes in Kangundo district secondary schools.
- iv) To identify the barriers to the adoption of IT on secondary school management practices in Kangundo District.

2.11 Demographic Characteristics of Respondents

2.11.1 Secondary School Head Teachers by Gender.

2.11.2 The respondents were asked to indicate their gender. This information was tabulated in table 4.2.

Table 4. 1: Gender of respondents

Gender	F	%
Male	22	73.3
Female	8	26.7
Total	30	100.0

Data in table 2 indicate that majority of the respondents 22 (73.3%) were male whereas 8 (26.7%) were female. This reveals that there were more male respondents than females. Male dominance can be attributed to the general trend in the country where by women occupy fewer managerial positions compared to men.

2.11.3 Age of Respondents

The respondents were asked to indicate their age. This is because the researcher felt that age can be a factor influencing the adoption of ICT. Their responses are presented in table 4.3

Table4. 2: Age of Respondents

Age Bracket	F	%
30 - 35	—	—
36 – 40	5	16.7

41 – 45	8	26.7
46 – 50	10	33.3
51 – 55	7	23.3
56 – 60	—	—
Total	30	100.0

Data in table 3 indicates that 10 (33.33%) of the head teachers were in the age bracket of 46 – 50 years, 7(23.3%) were in the age bracket of (51 – 55) years. Out of the 30 head teachers, 8 (26.7%) were in the age bracket of 41 – 45 years whereas 5 (16.70%) were in the bracket of 36 – 40 years. The findings indicate that majority of head teachers are past the middle age of 35-40 years, which could be a barrier in adopting ICT.

4.2.4 Experience as Head teacher

The study sought to find out the experience of the respondents in their current position. The study revealed that 10 (33.3%), had an experience of between 6 – 10 years; 15 and 5 (50.0%) had an experience of 11 – 15 years and 5 (16.70%) had an experience of between 0 – 5 years. Table 4.4 shows the responses.

Table4.3: Head Teachers' Experience

No of years	F	%
0 – 5	5	16.7
6 – 10	10	33.3

11 – 15	10	33.3
16 – 20	5	16.7
Total	30	100.0

Information in table 4.3 reveals that secondary schools are headed by principals with varied experience. Majority of the head teachers had long experience in heading of schools. This data indicates that the schools are headed by individuals with experience that can enable them respond to innovations like use of ICTs in management tasks and processes.

4.2.5 Type of School

Head teachers were also asked to indicate their school type. This could help the researcher establish if there was a significant relationship between the school type and the extent of ICTs integration in management tasks and processes. Table 4.5 presents the findings. **Table 4.4: Category of School**

School of category	F	%
Boy's Boarding	10	33.3
Girl's Boarding	10	33.3
Mixed Day	7	26.7
Mixed Boarding	2	6.7
Total	30	100.0

Data in Table 5 indicates that 10 (33.3%) of schools were boys' boarding, 10 (33.3%) were girls' boarding, 8 (26.7%) were mixed day schools and 2 (6.7%) were mixed boarding. This reveals that the schools were a representative sample for the study.

4.2.6 Education levels of respondents

The study sought to find out the education levels of respondents. The results are tabulated in the table 4.5 .

Table 4. 5: Education Levels of Respondents

Levels of education	F	%
M. Ed	6	20.0
B.Ed	15	50.0
BA/ B.Sc with	7	23.3
PGDE	2	6.7
Diploma	—	—
Total	30	100.0

The study revealed that majority of the head teachers is (50.0%) had attained a Bachelor of Education degree, 6 (20.0%) a Master of Education degree, 7 (23.3%), a BA/B.SC degree with PGDE and 2(6.7%) a diploma in education qualification. These findings indicate that secondary schools are headed by individuals with relevant professional qualifications and can therefore adapt to changes posed by the adoption of ICTs in management tasks and processes. Bellum (2003) found that there was a correlation between the amount of education managers took and the use of information technologies.

4.3 ICT Resources Available in Secondary Schools

The first objective of the study was to establish the ICT resources available in secondary schools in Kangundo district. Data was collected as follows to address this objective. The

respondents who participated in the study were first asked to indicate the number of computers in their school. Their responses are summarized in table 4. 6.

Table 4.6: Number of Computers in Schools

Number of computers	F	%
0	18	60.0
1-5	4	13.33
6-10	2	6.67
11-15	1	3.33
16-20	2	6.67
20-25	0	0
25-30	3	10.0
>30	0	0
Total	30	100

Data in the table indicates that majority of the schools 18(60%) have no computer in there school, 4(13.33%) schools have 1-5 computers, 2(6.67%) schools have 6-10 computers, 1(3.33%) schools have 11-15 computers, 2(6.67%) schools have 16-20 computers and 3(10%) schools have 25-30 computers. Lack of computers in majority of the school can be attributed to lack of capital. The presence of 16-20 computers in 3 schools is due to their use in teaching and learning computer as a subject rather than their use as a management tool. The presence of few computers in some schools is due to their use in exam production and processing. The respondents were further asked to indicate

the place where computers are located in their school. Their responses were as shown in table4. 8.

Table4. 7: Location of Computers

Location	F	%
Principal's office	4	13.33
Deputy Principal's office	1	3.33
Staff room	5	16.67
Secretary's office	12	40.00
Library	1	3.33
Computer laboratory	10	33.33
Science Laboratory(s)	0	0.00
General store	0	0.00

Schools that have installed computers 12 (40%) have them in Secretary's office. 10 (33.33%) of the schools with computers have them in the computer laboratory, 5(16.67 %0 in the staffroom, 4(13.33%) in the principal's office, 1 (3.33%) in deputy principals office and 1(3.33%) in the library. None of the schools with computers have them in Heads of department office(s), Science Labaratory(s) and General store. The few schools with a computer located in principal's office is due to low rates of its adoption as a management tool. Asked to indicate the number of computer laboratories in their schools the responses of the respondents were as shown in table 4.8.

Table 4.8: Number of Computers Laboratories in Schools

Number of laboratories	F	%
1	10	33.33

> 1	0	0.00
None	20	66.67
Total	30	100

10 schools (33.33%) have one computer laboratory. Majority of the schools 20(66.67%) have no laboratories. None of the schools has more than one computer laboratory. Lack of a computer laboratory in most of the schools can be attributed to the fact that most of the schools do not offer computer as a subject. The schools with laboratories only have one because computer is offered as an elective subject and is only taken by few students. Asked to indicate the number of computer technicians in their schools, the respondent's responses were as summarized in table 4.9.

Table 4.9: Number of Computers Technicians in Schools

Number of technicians	F	%
1	0	0
None	30	100
Total	30	100

None of the schools in the district have a computer technician. This can be attributed to the government policy on employment of support staff; where by it neither employs them nor funds schools for the same. Schools are there for expected to use their limited finances for all their support staff. This makes them not to employ all the required staff. Asked to indicate the internet service provider that serves their schools, the responses given by respondents are shown in the table 4.10.

Table 4.10: Schools' Internet Service Provider

Provider	F	%
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Safaricom	2	6.67
Zain	0	0.00
Others	0	0.00
None	28	93.33
Total	30	100

Only 2(6.67%) of schools in the district have an internet service provider and hence internet services in their school. Majority of the schools 28(93.33%) have no such services. Reasons for this could be: low recognition of internet as a research tool in most secondary schools, lack of technical know how on use of internet and negative attitude towards internet services.

The findings on this objective agree with a study by Pelgrum (2001) on obstacles in the Integration of ICT in Education; which stated that in some instances most schools cannot afford to employ a fulltime computer technician to be in charge of activities involving use of ICTs in pedagogy and management tasks and processes. They also concur with another study by Oloo (2009), which was made to determine the current use and attitude towards ICT in Kenyan schools which found that majority of the schools (58.9%) do not have internet connection.

4.4 Applications of ICT in Management Processes

The second objective of the study was: “To determine the applications of Information Technology in management processes in Kangundo district secondary

schools”. Data on how ICT is applied in the various management processes was collected and analysed as follows.

4.4.1 Application of ICT in Communication and Co-ordination

Respondents were asked to indicate the methods used to pass information to teachers and support staff. Table 4.12 present the findings.

Table 4.11: Methods used to Pass Information

Method	F	%
Memos	12	40.0
Emails	2	6.7
Phone calls	10	33.3
Letters	3	10.0
Brief meetings	3	10.0
Total	30	100.0

Data in table 4.11 indicates that majority of the head teachers 12 (40.0%) use memos to communicate to staff members, 10 (33.3%) use phone calls 3 (10.0 %) use letters and brief meetings, whereas 2 (6.7%) use e-mails. The results of the analysis strongly indicate that access to information is through memos posted either on staff notice boards or addressed to departmental heads. Usage of ICT based means of communication (emails) is very minimal. One factor causing this could be lack of technical know how by both school heads and staff on use of email.

4.4.2 Application of ICT in Planning and Decision Making

To enable the study establish whether ICT was applied in decision making and planning, respondents were asked to indicate the students' data that they maintain and how they did it. They were further asked to indicate the staff, laboratory, library, store and finance data they maintained; and how they did it. Their responses were as shown in the subsequent tables.

Table 4.12: Student Data Maintained in Schools

Data stored	F	%
Students' marks	22	73.3
Fees payments	30	100.0
Students' contacts	26	86.67
Student's medical details	16	53.33
Students' Special skills and talents	5	16.67

The study findings indicated that 22 (73.3%) keep data on students' marks, 30 (100%) keep on fees payment, whereas 26 (86.67%) keep on student's contact, 16 (53.33%) keep on Student's medical details and 5 (16.67%) keep that on Students' Special skills and talents. The findings show that most of the schools maintain the relevant student data as one of the management practices. Asked the method of data storage they use, they gave responses as summarized in table 4.14.

Table 4.13: Method of Storing Student Data

Method	F	%
Files	28	93.33
Management information system (MIS)	1	3.33

Both files and MIS	1	3.33
Total	30	100.0

Majority of schools 28(93.33%) store student data using files, 1(3.33%) MIS and 1(3.33%) in both files and MIS. This shows that student data is maintained using manual means of data storage as opposed to use of ICT. This could be due to unavailability of ICT facilities in most schools and also lack of technical know how. Further the respondents were asked to indicate the various staff data maintained in school and against each type of data indicate the method of storage ie files, computer database or both files and computer data base. This enabled the researcher to establish if staff data is maintained as part of the management process. All head teachers indicated that they keep this information in files as opposed to computers through a staff management information system SMIS or a management information system (MIS). Table 4.15 indicates the findings on the data maintained by head teachers.

Table 4.14: Staff Data Maintained

Response	F	%
Contacts for teachers	12	40.0

Contact for non – teaching staff	10	33.3
Teachers staff qualifications	20	66.7
Special skills for teachers	15	50.0
Staff medical history	8	26.7
Staff welfare reports	18	60.0

Further the study sought to establish the laboratory data maintained and method of storage. The study established that in all schools, laboratory data maintained is stored in files as opposed to computer system. Table 4.16 indicates the data maintained.

Table 4.15: Laboratory Data Maintained

Response	F	%
New equipment and purchases	13	43.3
Breakages	9	30.0
Replacement of equipment	8	26.7
Total	30	100.0

This reveals that there are low rates of maintenance of laboratory data in schools. This could be due to the fact that most of the schools lack a laboratory technician. One science teacher is entrusted in doing that work and can not do it effectively due to his other duties. Library data is important in school decision making and planning for schools. The respondents were thus asked to indicate the library data they maintained and method of storage. The respondents indicated that majority of the schools do not keep laboratory data as a management task. In all the schools, the data is kept in files. Use of such manual

means of data keeping would be due to factors such as: lack of ICT facilities, lack of competent library personnel and lack of technical know how on how ICT could be applied in this work. The findings reveal that although maintenance of library data is important in schools' planning and decision making, most schools did not take it seriously. This could be due to the fact that in most of the schools, there was no librarian. This work is supposed to be done by a teacher in charge and a library prefect; who could not keep such data effectively due to their other duties. Table 4.17 presents the findings.

Table 4.16: Library Data Maintained

Data type	F	%
New book purchases	10	33.3
Book issues to students and teachers	7	23.3
Book replacements	8	26.7
Others	5	16.7
Total	30	100.0

Further, the researcher sought to know the store data maintained in schools and method of storage. 10 (33.3%) head teachers indicated that they keep data on new purchases of materials, 5 (16.7%) on damages of materials, 7 (23.3%) on repair of materials and 8 (26.7%) on other types of store data. The responses show that most of the schools do not keep comprehensive store data. It was found that 25 schools (83%) keep the data using files as opposed to ICT means of storage. This indicated minimal use of ICT in this area of management. This could be attributed to the fact that the store keepers employed in schools lack competence in ICT usage. Table 4.18 presents the findings.

Table 4.17: Store Data Maintained

Data type	F	%
New materials purchased	10	33.3
Damages of materials	5	16.7
Repair of materials	7	23.3
Others	8	26.7
Total	30	100.0

Meetings provide for a for planning and decision making in an organisation. Respondents were thus asked to indicate how minutes and records of meetings in their schools were kept. This revealed that in all the schools 30(100%), this was done using files.

4.4.3 Application of ICT in Control

Control is yet another management process. To investigate the integration of ICT in control, the respondents were asked to indicate how they carry out financial management and staff absence control. The respondents were asked to indicate who was responsible for maintaining financial records in the school. Table 4.19 presents the findings.

Table 4.18: Maintenance of Schools' Financial Records

Person responsible	F	%
Bursar/accounts clerk	27	90

Head teacher	3	10
Total	30	100.0

In the majority of the schools, financial records are maintained by Bursar/accounts clerk. The respondents were further asked to indicate how data on receipts and expenditure of school money is kept .The findings are presented in table 4.20.

Table 4.19: Storage of Data on Money Receipts and Expenditure

Method of Storage	F	%
In accounts books	22	73.33
In files	6	20.0
In accounts books and a computer database	1	3.33
In files and a computer database	1	3.33
Total	30	100.0

Accounts books are used to maintain financial data on receipts and expenditure in most of the schools. This revealed very low usage rates of ICT in this area of management. This can be due to lack of relevant ICT competence on part of bursars and accounts clerks.

To establish the use of ICTs in monitoring staff absence control. The respondents were asked to indicate the methods they apply to monitor the staff daily attendance and exit from work. The findings are in table 4.21.

Table 4.20: Staff Absence Control

Response	F	%
Staff record their time in Books / file	5	16.67

Gate watchman records time	15	50.0
Staff clock in and out in computer system	—	—
Principal's Secretary records time	10	33.33
Others	—	—
Total	30	100.0

The most applied method of staff absence control is recording of time by gate watchman. This was used in 15(50%) of the schools. Clocking in and out in a computer system was not used in any of the schools. The factors leading to this could be: ignorance by head teachers of the existence of such systems of absence control, and lack of ICT facilities in majority of the schools which would be put into such usage.

4.4.4 Application of ICT in Staffing

Staffing is a key aspect of school management processes. To investigate the integration of ICT in staffing, the respondents were asked to indicate how they kept details of the various applicants during staff recruitment. The study revealed that in most of the schools 29 (99.7%), recruitment details are kept / maintained using files. Only one (3.3%) of the schools used computer database and files. Lack of usage of ICT in this area could be attributed to 'cultural factors' where by most schools are used to such information being kept manually in files and would be reluctant to adopt the ICT innovation in this area. As Adeya (2001) notes, it has been observed that in developing countries, manual means of data keeping have been used for a long time; to an extent that in some organizations manual data keeping has become the 'culture of storing data'. This has led to resistance

to adopt ICT in some organizations since people have become used to manual systems of data keeping and semi-manual means of data processing. Table 4.22 indicates these findings.

Table4.21: Storage of Recruitment Details

Response	F	%
Files	29	96.7
Files and computer database	1	3.3
Total	30	100.0

The findings on this objective concurs with Fourier and Alt (2002) who asserted that the cultural context of ICT adoption and attitudes towards ICT adoption affect the rate at which ICT is adopted.

4.5 Perceived Benefits of Integrating ICT in to Secondary Schools' Management Processes

The third objective of the study was “To determine the perceived benefits of integrating IT in to school management processes in Kangundo district secondary schools”.

In a bid to collect data on the objective, the researcher formulated several questions to elicit responses. The data collected is presented and analysed in the table 4.22.

Table 4.22:Perceived Benefits of Integrating ICT in Schools' Management Processes

Statement	SA		A		UD		D		SD	
	F	%	F	%	F	%	F	%	F	%
Computer database leads	14	46.6	8	26.7	2	6.7	6	20.0	0	0

to minimal data loss										
Computer data base leads to faster access of information compared to filing systems	15	50	10	33.3	5	16.7	0	0	0	0
CDB are economical to storage space compared to manual filling systems	16	53.3	10	33.3	3	10.0	1	3.3	0	0
Editing of information is easier in CDB compared to manual filing systems	8	26.7	12	40.0	7	23.3	3	10.0	0	0
Computer based information systems allows for networking of data from different offices	10	33.33	5	16.67	6	20.0	8	26.67	1	3.33
It is faster to process information using computer systems than when using manual system	17	56.67	8	26.67	2	6.67	3	10	1	3.33
CBS enhances accuracy in data processing	22	73.3	3	10.0	5	16.7	-	-	-	-
CBS enhance decision making	2	6.7	12	40.0	3	10.0	10	33.3	3	10.0
CBIs increases quality in communication	10	33.3	3	10.0	2	6.7	12	40.0	3	10.0
CBIs increases co-ordination between teachers	8	26.7	15	50.0	7	23.3	-	-	-	-

KEY : **CBD** – Computer data bases , **CBIS** – Computer bases information systems

On the question whether computer database leads to minimal data loss, the data in table 4.23 above indicates that majority of head teachers 14 (46.7%) strongly agreed that computer database lead to minimal loss of data when used, 8 (26.7%) agreed, 6 (20.0%) disagreed, whereas 2 (6.7%) were undecided. This shows a general agreement by head

teachers that use of ICT in data storage can minimize data losses. However despite acknowledging this, the head teachers have not adopted use of ICT in this area and continue to use manual means of data storage. Some of the factors leading to this would be lack of ICT competence and lack of capital for implementing ICT in their schools.

Further, majority of head teachers 15 (50.0%) strongly agreed that it is faster to access required information in computer based databases (CBD) as compared to manual filing systems. Ten (33.3%) agreed 5 (16.7%) were undecided. The general agreement to this statement could be due to the fact that they had an experience on searching information from the 'traditional' methods of keeping information such as books and files and had already faced some challenges on it.

Asked the extent to which they agreed with the statement that computer based databases are more economical to storage space compared to manual filing systems, 16 respondents (53.3%) strongly agreed, 10 (33.3%) agreed, 3 (10.0%) were undecided and none (0.0%) strongly disagreed. The high rates of agreement to this statement could be due to the fact that this was the most observable benefit of ICT visa vis filing systems. In most of the offices, there are already big piles of files and thus they could see this benefit of ICT more easily.

Further asked whether it is easy to edit information in computer based information systems compared to manual filing systems, 8 of the respondents (26.6%) strongly agreed to this statement, 12 (40.0%) agreed, 7 (23.3 %) were undecided, 3 (10.0%) disagreed and none (0.0%) disagreed. It was noted that there was a discrepancy between the response

rates obtained and the rates in the previous question. This could be attributed to lack of technical know of what editing using ICT entails.

On whether computer based information systems allows for networking of data from different offices which is not possible with the filing system, the study established that 10 (33.3%) of the respondents strongly agreed with the statement, 5 (16.67%) agreed, 6 (20.0%) were undecided, 8 (26.67%) disagreed and 1 (3.33%) strongly disagreed. The low rates of agreement with this statement may be due to ignorance by head teachers on networking of data and how ICT can be employed in it.

On the question on the extent to which the respondents agreed with the statement that it is faster to process information using computer systems than when using manual system, 17 (56.67%) strongly agreed, 8 (26.67%) agreed, 2 (6.67%) were undecided, 3 (10%) disagreed and 1 (3.33%) strongly disagreed.

The responses to the statement that computer based systems enhance accuracy in data processing compared to manual data processing were: 22 (73.3%) of the respondents strongly agreed, 3 (10.0%) agreed and 5 (16.7%) were undecided. The agreement with this statement by majority of the respondents can be attributed to the general perception that ICT systems are basically made for data processing and are superior to data processing through manual means. In addition a calculator, which too many people is a 'simple computer' is a common device in most offices and its capabilities are well known and within the principal's experiences.

On the statement that computer based information systems increase the efficiency in decision making, 2 respondents (6.7%) strongly agreed, 12 (40.0 %) agreed, 3 (10.0%) were undecided, 10 (33.3%) disagreed and 3 (10.0%) strongly disagreed. These findings agree with those of a study by Dawson (2001) that efficiency in decision making was increased in schools where SMIS are used.

On the statement that computer based information systems increase the quality of communication, 10 respondents (3.3%) strongly agreed, 3(10.0 %) agreed, 2(6.7%) were undecided, 12(40.0%) disagreed and 3(10.0%) strongly disagreed. Many respondents disagreed with this possibly because they are not even conversant with email which is the the basic form of such communication.

The last statement was computer based data systems increase coordination between teachers compared to manual systems. 8 respondents (26.7%) strongly agreed, 15(50.0 %) agreed, and 7(23.3%) were undecided.

By and large there was a general perception by the respondents that adoption of ICT in management processes had some benefits. This agrees with a study by Nolan (1996) which examined implementation of computerized school information systems and determined that information systems have largely changed roles of school managers. The study found that school managers acknowledged that a manager who does not use information systems is not able to perform his duties sufficiently any more. Policy makers can take advantage and use this as a selling point to sensitise school heads on the adoption of ICT. The researcher feels that this could contribute greatly to an improvement in the efficiency with which management processes are executed. The findings also agree with those of a study by Anderson and Dexter (2005) that examined the preference and effect of school technology leadership; and found out that school managers have not taken sufficient education on efficient use of the information technologies

4.6 Barriers to the Adoption of IT in Management Processes

The fourth objective of the study was: “To identify the barriers to the adoption of IT in secondary school management practices in Kangundo District”. To enable collection of data on this objective, various questions were formulated to elicit responses. The findings are presented below: Respondents were first asked to indicate the category of ICT in-service course they had attended; their responses are shown in table 4.29 :

Table4.23: In-service Course on ICT attended by Head Teachers

Response	F	%
Basic training	5	16.7
Intermediate training	1	3.3
Advanced training	-	-
None	24	80.0
Total	30	100.0

Majority 24(80%) had not undergone any in-service course on ICT, 5(16.7%) had undergone basic and 1(3.3%) intermediate training. Further asked to indicate the number teachers in their schools who had undergone in service training related to ICT, their responses were as summarized in table 4.30 :

Table 4.24: No on Teachers with ICT Training.

No of teachers	F	%
None	21	70.00
1-3	7	23.33

4-6	2	6.67
7-9	0	0.00
<=10	0	0.00
Total	30	100.0

As shown, in majority of the schools 21(70%), no teacher had undergone ICT training. 7 schools (23.33%) of the schools had between 1-3 teachers with ICT training while 2(6.67%) had 4-6 teachers. Asked to indicate the number of subordinate staff who had undergone ICT training, the respondents in 4.31 were obtained.

Table 4.25: No of Subordinate Staff with ICT Training.

No of staff	F	%
None	24	80.00
1-3	6	20.00
4-6	0	0.00
7-9	0	0.00
<=10	0	0.00
Total	30	100.0

Twenty four schools (80%) did not have any subordinate staff with ICT training while 6(20%) had 1-3 subordinate staff with ICT training. The researcher also sought to know the sources of power in the various schools, and obtained the responses in table 4.26 .

Table 4.26: Sources of Power in Schools

Source	F	%
Electricity	12	40.00
Generator	8	26.67

Solar	1	3.33
None	9	30.0
<hr/>		
Total	30	100.0

12 schools (40%) had installed electricity, 8 (26.67%) a generator and 1 (3.33%) had solar power. 9 schools (30.00%) did not have any source of power. of challenges. When asked an open ended question on the challenges faced by their schools in integrating ICT in management processes and tasks, Headteachers who responded various challenges. These included lack of ICT competence, lack of power supply, resistance by teachers, lack of finances and poor internet connectivity among others. Table 4.33 presents the findings:

Table 4.27: Constraints Towards ICTs Integration in Management

Response	F	%
Lack of electricity supply	18	60
Resistance by teachers	12	40.0
Lack of finances	22	73.3
Poor internet connectivity	15	50.0
Lack of technical know how on ICT	19	63.3
Limitation of storage space	11	36.7
Staff lacking awareness of value of ICT	17	56.7

The finding on this objective concurs with Oloo's (2009) study which found that school administrators recognised the need for the inco-operation of ICT in school administration and other activities. This transformation will result in increased learning gains for students, creating and allowing opportunities for learners to develop their creativity, problem solving abilities, informal reasoning skills and communication skills. In his

study where Gurr (2000) examined effects of school management information systems on working of primary school managers in Australia, managers stated that use of SMIS has introduced them information technologies and facilities, lessened their workload, made management process more efficient and helped them use time more efficiently.

CHAPTER FIVE

5.0 SUMMARY OF FINDINGS, CONCLUSIONS AND RECOMMENDATIONS

5.1 Introduction

This chapter presents a summary and discussion for the study, conclusions, recommendations and suggestions for further study.

5.2 Summary

The purpose of the study was to elucidate the integration levels of ICT in management tasks and processes in secondary schools in Kangundo Districts Kenya. The study adopted a descriptive survey design. The target population was all the 53 head teachers of various secondary schools in Kangundo District. The sample consisted of 44 head teachers from the secondary schools. Data was collected through the use of questionnaires for head teachers. Four research questions were formulated to guide the study. Research questions aimed at establishing: - the ICT resources available in secondary schools in Kangundo district, Kenya; the applications of Information Technology in management processes in Kangundo district secondary schools; the perceived benefits of integrating IT in to school management processes in Kangundo district secondary schools and the barriers to the adoption of IT in secondary school management practices in Kangundo district. Below is a summary of the findings as per the four objectives:

5.2.1 ICT Resources

Majority of the secondary schools in Kangundo district have no capacity for ICT. This is indicated by the responses obtained on number of computers in schools, location of computers, number of computer laboratories, number of computer technicians and

schools' internet service provider. Majority of the schools(60%) have no single computer in the school, Majority of the schools (66.67%) have no computer laboratory in the school, Majority of the schools (93.33%) have no internet services in their school and none of the schools (100%) has a computer technician. More over, of the schools that have installed computers, these were only found in a few locations such as principal's office (13.33%) , Deputy principal's office (3.33%) ,staffroom (16.67%),Secretaries office (40%),library (3.33%) and computer laboratory (33.33%).The finding revealed that there were low rates of establishment of ICT infrastructure for use in teaching and learning and management tasks and processes. The location of computers mostly in the secretaries and computer laboratories can be attributed to the fact that many schools dwell more on installation of computers office work and for teaching computer as a subject.

5.2.2 Applications of ICT in Management Processes.

The biggest proportions of secondary schools in Kangundo district have not incorporated ICT in management processes. The use of ICTs was largely limited to teaching and learning computer studies as a subject. The scores obtained from the items researched on were as follows: schools that use emails in communication (6.7%),schools that maintain student data using computer based MIS (3.33%) , schools that maintain staff data using MIS (0%),schools that maintain laboratory data using MIS (0%),schools that maintain store data using MIS (0%), schools that maintain financial records using MIS (3.33%), school that exercise staff absence control using clocking in and out in a computer system (0%) and schools that maintain staff recruitment details in a computer

data base (3.3%).The researcher feels that the main factor leading to not adoption of ICT is that most school managers are used to the ‘traditional’ methods of keeping data manually and are reluctant to use ICT because they take it as a new idea.

5.2.3 Perceived Benefits of Integrating ICT in Management Processes

Most of the respondents acknowledged that ICT adoption in management processes had benefits .The scores from researched items were as follows: 73.4% of the respondents agreed that computer data bases lead to minimal data loss; 86.6% agreed that CBDs are more economical to storage space compared to manual filing systems; 66.7% agreed that it is easy to edit information in computer based information systems compared to manual filling systems; 50.9% agreed that computer based information systems allow for networking of data from different offices; 83.3% agreed that CBS enhances accuracy in data processing and 56.7% agreed that CBIs increases co-ordination between teachers. Low score rates were only obtained in two areas where by 53.3% of respondents disagreed that CBSs enhance decision making and 56.7 disagreed that CBIs increases quality of communication. The researcher feels that if school managers are sensitized on ICT, there will be more adoption of it in school management practices. This is because majority of the managers agree that inco-operation of ICT in school management practices has some advantages. This would lead to an increase in the efficiency with which this management tasks are executed. The findings concur with Oloo’s (2009) study which found that school administrators recognised the need for the inco-operation of ICT in school administration and other activities. The apparent immense educational potential of ICTs has captivated stakeholders in education around the world. There is a widespread

belief that ICTs can and will empower teacher, students and educational managers. This transformation will result in increased learning gains for students, creating and allowing opportunities for learners to develop their creativity, problem solving abilities, informal reasoning skills and communication skills. Gene (2003) says that school management information systems have changed school management areas of leadership, decision making, workload, human resource management, communication, responsibility and planning. By means of information systems, school managers are able to determine required information, access the information, interpret the data, and use the data in decision making and evaluating and developing efficient use of the system. Researches in various countries confirm that school management information systems increase organizational and managerial effectiveness. After studies with American school managers, Dawson (2001) stated that efficiency has increased in decision making at schools where SMIS are used. In his study where Gurr (2000) examined effects of school management information systems on working of primary school managers in Australia, managers stated that use of SMIS has introduced them information technologies and facilities, lessened their workload, made management process more efficient and helped them use time more efficiently.

5.2.4 Barriers to Adoption of ICT in Secondary Schools' Management Processes

There were found to be a number of barriers which hindered the adoption of ICT in Kangundo district secondary schools. Some of the constraints cited by respondents were: Lack of ICT training by school head teachers and subordinate staff; where by 80% of

head teachers, 70% of teachers and 80% of support staff had not undergone any ICT training. Lack of power supply was also another barrier. Only 40% of the schools reported to have installed electricity. 26% of the schools had generators which although they can support ICT facilities, they are relatively expensive to use especially for long durations. 3.33% of schools were found to have solar power; which though cheap, is not reliable and efficient enough to support large scale usage. 30% of the schools did not have any source of power at all. Other constraints cited and response rates were: resistance by teachers (40%), lack of finances (73.3%), poor internet connectivity (50%), limitation of storage space (36.7%) and lack of awareness by staff of value of ICT. The findings concur with Saide report (2003) that indicates that the key problem in use of ICTs in education is availability of finance to purchase the infrastructure. They further concur with Muriithi (2005) who found out that internet connectivity is one of the key reasons for under use of ICT in education in African context. Pelgrum (2001) asserted that the cultural context of ICT adoption, language barriers, and attitudes towards ICT adoption affect the rate at which it is adopted. Perceived difficulty in the integration of ICT in education is based on the belief that technology use is challenging, its implementation requires extra time, technology skills are difficult to learn and the cost of attaining and maintaining resources is prohibitive (Fourie and Alt 2002, cited in Muriithi 2005). According to Oloo (2009), a survey carried out in 2008 in selected secondary schools in all provinces to determine the current use and attitude towards ICT in Kenyan schools revealed that challenges in implementation of ICT included teachers' ICT competence, lack of adequate number of computers, educational applications, training, policy and strategy on how integration of ICT should be done. All schools felt that they did not have

adequate funding to purchase ICT equipment and would consider buying them for administrative purposes. School administrators recognized the need for the in-cooperation of ICT in school administration and other activities.

5.3 Conclusion

Based on the research findings, the following conclusions were made regarding the integration levels of ICT integration in management practices in secondary schools in Kangundo district.

5.3.1 ICT Resources

ICT resources of interest to the researcher included: number of computers in schools, existence of computer laboratories, computer technicians and schools' internet service provider. The study found that the status of ICT resources in schools was variable with some schools being more resourced than others.

5.3.2 Applications of ICT in Management Processes

The study sought to establish the management processes in which ICT was applied. ICT was found to be mostly adopted in teaching and learning computer studies as a subject and minimally adopted in management processes.

5.3.3 Perceived Benefits of Integrating ICT in Management Processes.

The study was also made to establish the perceived benefits of integrating IT in to school management processes in Kangundo district secondary schools. There was a general

perception by Head teachers in the district that there were benefits of ICT adoption in schools' management processes.

5.3.4 Barriers to Adoption of ICT in Secondary Schools' Management Processes

The researcher also sought to establish if there were any barriers to the establishment of ICT. Failure to adopt ICT in Kangundo district schools management processes were as a result of a number of barriers. If addressed, there would be increased use of ICT in management processes.

5.4 Recommendations

Based on the research findings, the researcher makes the following recommendations:

- i) School management in schools without computers should focus on increasing their ICTs capacities by purchasing of computers, building computer rooms and seeking support for connectivity to internet. To increase on access of computers by all school employees, schools that have installed computers should avail them in all offices. For proper maintenance of the computers, schools that have assimilated ICT should employ a full time technician.
- ii) The study revealed that use of ICTs was largely limited to teaching and learning computer studies as a subject. There is need for the ministry of education to sensitise school managers on ICT use as a management tool.
- iii) Since school heads perceived ICT to have a potential for increased efficiency in management processes, policy makers in education should use this as a 'selling point' in promoting its adoption in schools.

iv) Barriers to ICT adoption revolved around lack of ICT competence and also finances. The teacher training curriculum in universities and teacher training colleges should include units on ICT and how it can be employed in classroom teaching and school management; as an emerging issue. The ministry of education should offer in service ICT training for all secondary school teachers and managers; to equip them with necessary ICT skills. The Government through the ministry establish a kitty on development of ICT infrastructure in schools, in which schools should be given grants.

5.5 Suggestions for Further Research

Based on the findings, the researcher makes the following suggestions for further study. A study should be carried on:

- i. Teachers' attitudes and perceptions towards ICT integration in management
- ii. Levels of intergration of ICT in teaching and learning processes.

REFERENCES

Adeya, N.C. (2001), *Information and Communication Technologies in Africa*. Oxford: INASP.

Adeosum, O.O. (2009). *Strategic Application of Information and Communication*

- Technology for Effective Service Delivery in Banking Industry*, Retrieved June 6, 2009, from <http://www.scipub.org>
- Allen, T., Morton, M.S. (1994). *Information Technology and the Corporation of the 1990s*. New York: Oxford University Press.
- Anderson, R.E.; Dexter, S. (2005). *School technology Leadership: An Empirical Investigation of Prevalence and Effect*. *Educational Administration Quarterly*, 41(1), 49-82
- Armstrong, m. (2001). *A Handbook of Human Resource Management Practice* (8th edition). London: Kogan Page Limited.
- Bajaj, P.S., Rao, V.S.P (2004). *Management Process and Organizations*. New Delhi. Excel Books.
- Barta *etal* (eds), (1995). *Information Technology in Education Management*. London: Chaplan and Hall.
- Bellum, J.M. (2003). *Rogers' Innovation Process in Organizations: Information Systems Implementation in Education Organizations*. Doctorate Thesis. Nebraska: University of Nebraska.
- Bhatnagar, S. (2000). *Social Implications of Information and Communication Journal of Information Systems in Developing Countries*, 1, 4, 1 – 9. Retrieved June 13, 2009 from <http://www.ejisd.org>.
- Bird, p., (1991) "Computer Assisted School Administration in England". *Journal of Research on Computing in Education*, 24(1),20-40.
- Chris Emerson and Ivor Goddard, (1993). *Managing Staff schools*: Oxford: Heinemann Publishers.
- Christopher, J.C. (2003). *Extent of Decision Support Information Technology use by Principals in Virginia Public Schools*. Doctorate Thesis. Virginia: Virginia Common Wealth University.
- Dawson, C.G.B. (2001). *A national Study of the Influence of Computer technology Training Received by K--12principals on the Integration of Computer Technology into the Curricula of Schools*. Doctorate thesis. University Of Louisiana At Monroe

- Demir, K. (2006): *School Management Information in Primary Schools*. Retrieved June 21, 2009 from http://www.eric.ed.gov/Ericwebportal/record_Detail?accno=ED501456.
- Diwan, P. (1998). *Management Principles and Practices*. New Delhi: Excel Books.
- Flanagan, L.; Jacobsen, M. (2003). Technology Leadership for the Twenty-first Century Principal. *Journal of Educational Administration*, 41(2), 124-142.
- Fung, A.C.W.(1991) “Computer Assisted School Administration in Hong kong”.*Journal of Research and Computing in Education*, 24(1), 41.
- Gaur, A.J., Gaur, S.S. (2006); *Statistical Methods For Practice and Research*.NewDeldhi : Response Books.
- Gene, U.G. (2003). *Missouri Public School Principals' Computer Usage and Conformity to Technology Standards*. Doctorate Thesis, Columbia: University Of Missouri.
- G.O.K (2005). Sessional paper No. 1 of 2005: *A policy Framework for Educational Training and Research*. Nairobi: Government Printer.
- GOK (2008). *National Information and Communication Technology (ICT) Policy*. Nairobi: Government Printer.
- Gregorash, L.A. (2004). *The Influence of Site-Based Management on Educational Technology Decision-Making Strategies as Perceived by Selected School Principals in Bexar County*. Doctorate Thesis, Texas: TexasA&M University.
- Haag, S.; Cummings, M.; Dawkings, J. (1998). *Management Information Systems for the Information Age*. McGraw-Hill Pub.
- Hedberg, J.G.; Harper, B; Bloch, D.; College, B. (1992). Educational Information Systems: Problems of the Small Educational Organization. *Australian Journal of Educational Technology*, 8(2), 132-160.
- Inkster, C.D. (1998). *Technology Leadership in Elementary School Principals: A Comparative Case Study*. Doctorate Thesis. University Of Minnesota.
- Islam, K.M. (2003) *Strategies for use of Information and Communication Technologies in Education (ICTs) in Educational Institutions*. New Delhi: Technology Promotion Council.

- Krejcie, R. V., & Morgan, D. W. (1970). Determining Sample Size for Research Activities. *Educational and Psychological Measurement*, 30, 607-610.
- Landon, C.K., Landon, P.J. (2000). *Management Information Systems*. New Jersey.
- Lan, F.S., 1997. *Information and Communication Technologies, Social Processes and Organizational Change*. ADEA News Lett., 9: 10-12.
- Makau, B., (1990). *Computers in Kenya's Schools: A case Study of An Innovation in Education*. Ottawa: IDRC.
- Management Information System for schools, Retrieved June 21, 2009, from <http://www.broncom.com/>
- Management Information Systems, Retrieved July 4, 2009 from <http://www.Occ.treas.gov/handbook/mis.pdf>
- May, S. J. (2003). *The Impact of Technology on job Effectiveness: Perceptions of High-School Principals*. Doctorate Thesis. Northern Illinois University.
- Menjo, K (2005). *Application of Information Technology to School Administration, A study of the Experience of Secondary School Administration and Teachers in Nandi north District, Kenya*. MED Thesis, Moi University, School of Education .
- Meaning of information Technology, Retrieved May 30, 2009, from <http://www.ita.org>.
- MOE (1979): *A Manual for Heads of Secondary Schools in Kenya*. Nairobi: Jomo Kenyatta Foundation.
- Mugenda, M.O., Mugenda, A.G. (1999). *Research methods: Quantitative and Qualitative approaches*. Nairobi: Acts press
- Munyua, H. (2000): *The Role of Information and Communication Technology in rural development and food security; Lessons from Field experiences in Developing Countries*. Nairobi: African Regional Centre.
- Muriithi, P. (2005). *A Framework for Integrating ICT in the Teaching and Learning Process in Secondary Schools in Kenya*. Msc. Thesis, University of Nairobi, School of Computing Studies, 2005.

- Pelgrum W.J. (2001). *Obstacles in the Integration of ICT in Education: Results from Worldwide Education. Assessments: Computers in Education: 37,163 – 178.*
- Nikalat, V and Ramnarayan, S. (1998) *Managing Organizational Change* .New Delhi: Response Books.
- Nolan, C. (1996). Implementing Computerized School Information Systems: Case Studies from New Zealand. *International Journal of Educational Research*, 25(4), 335-349.
- O'Brien, J.A. (2001). *Introduction to Information Systems; Essentials for the Internet – worked e – Business Enterprise (10th ed)*. New York: MC Graw-hill/Irwin.
- Okumbe, J.A. (1998). *Educational Management; Theory and practice Nairobi*: Nairobi university Press.
- Olembo, J.O., Wanga, P.E., Karagu, N.M. (1992). *Management in Education*. Nairobi: ERAP
- Olivia, P.R. (1976). *Supervision for Today's Schools*. New York: Harper and Row
- Oloo, L.M (2009): *Baseline Survey eport for ICT in Secondary Schools In Selected parts of Kenya*, Retrieved from [http://www.gg.rhul.ac.uk/ict4d/kenyan school.pdf](http://www.gg.rhul.ac.uk/ict4d/kenyan%20school.pdf)-
- Onen, D., Yuko,w. (2005). *A handbook for Beginning Researchers, A General Guide to Writing Research Proposal and Report*. Kisumu: Options Press and Publishers.
- SAIDE (2003) *The use of Computer in Schools; Report on Research into the Use of Computers for Teaching and Learning in that one Schools in South Africa* , Johannesburg: SAIDE: <http://196.35.72.162/saide/mr>.
- School Management Information System, Retrieved June 21, 2009, From <http://www.leadingtoday.org/weleadinlearning/spsuobschool-management-information-sys.htm>
- Scott, W. G. (1967). *Organizational Theory: A Behavioral analysis for management*. Illinois: Richard. D. Irwin..
- Student Information System-School Administration Software, Retrieved June 06, 2009 from [http:// www.rediker.com](http://www.rediker.com).
- Talero, E., Gandate, P. (1996). *“Harnessing information for Development: A Proposal for a World Bank Group Strategy*. Washington D.C: World Bank.
- Tusubira, F.F. (2001). *What is Information and Communication Technology*, Retrieved

- May 30, 2009, from <http://www.makerere.ac.ug>.
- Visscher, A. (1996). A Fundamental Methodology for Designing Management Information Systems for Schools. *Journal of Research on Computing in Education*, 27(2), 231-249.
- Webster, Frank, and Robins, Kevin. (1986). *Information Technology—A Luddite Analysis*. Norwood, NJ: Ablex.
- What is Management and What do Managers do? A system Theory Account. Retrieved July, 11, 2009, from [http://www.hedweb.com/by Charlton/rip-management.html](http://www.hedweb.com/by%20Charlton/rip-management.html).
- What is Systems Theory? Retrieved July 11, 2009, from <http://www.pespmc/rub.ac.be/systheor.html>.

APPENDIX A: QUESTIONNAIRE FOR HEAD TEACHERS

I am a student of Moi University doing a research on levels of integration of information communication technology in management tasks and processes in Secondary Schools in

Kangundo District. This questionnaire intends to gather information useful for the research. Your responses will be treated with utmost confidentiality.

Instructions.

Please read the question carefully and then write your response on the spaces provided according to instruction given by each question.

SECTION A: Demographic information

1. Name of the school (Optional) _____
2. Gender (Please tick where appropriate)
Male Female
3. Age (Please tick where appropriate)
30-35 years 41-45 years 50-55 years
36-40 years 46-50 years 55-60 years
4. For how long have you been a head teacher? (Please tick where appropriate).
0 – 5 years 16 – 20 years 26 – 30 years
6 – 10 years 21 – 25 years 11 – 15 years
5. Type of school (Please tick where appropriate).
Boy’s boarding Girl’s boarding Mixed day Mixed boarding
6. Please indicate the number of students in your school _____
7. Which is your highest professional qualification? (Please tick where appropriate)
M.Ed B.Ed B.Sc/B.A with PGDE
Diploma in education SI Others (Specify) _____

SECTION B: Schools’ ICT Facilities

8. Please indicate the number of computers in your school
0 1-5 6-10 11-15
16-20 21-25 26-30 >30
9. If you have answered question 8 above, please tick against the place where computers are located in your school.
Principal’s office Deputy Principal’s office Staff room
Heads of department office(s) Library Laboratory

General store [] Others specify)_____

10. Please indicate the number of computer laboratories in your school

1 [] >1 [] None []

11. Please indicate the number of computer technicians in your school

1 [] None []

12. Please indicate the internet service provider in your school (eg access Kenya, Zain wireless, Safaricom wireless, Orange wireless, Yu wireless, etc). _____

SECTION C: Applications of ICT on Management processes

a) Communication and coordination

13. Which methods do you use to pass information to teachers and subordinate staff?

(Please tick where appropriate)

Memos [] E-mail [] Phone calls [] Letters[] Notice board []

Others (specify) _____

b) Planning and decision making

14. (a) Which of the following student data do you maintain? (Please tick where appropriate)

Students' marks [] Fees payment [] students' contacts []

Student's medical details [] Students' Special skills and talents []

Others (Specify)_____

(b) Which method of data storage do you use (Please tick where appropriate)

Files []

Use of Student management information system (STMIS) []

Both files and STMIS[]

15) Which of the following staff data do you maintain (Please tick where appropriate, against each method please also indicate the method you use to store data i.e.: Files- 1, Computer data base -2 or Both files and computer data base -3)

Data Maintained	Method of storage
Contact for teachers [<input type="checkbox"/>]

Contacts for non teaching staff	[]
Qualifications for teachers and other Staff	[]
Special skills for teachers	[]
Medical history of staff	[]
Staff Welfare reports	[]
Others(Specify)	[]	
Non of the above	[]	

16) Which of the following laboratory data is maintained in your School? (Please tick where appropriate, against each method please also indicate the method you use to store data (ie: Files- 1, Computer data base -2 or Both files and computer data base -3)

Data Maintained		Method of storage
All new equipment purchases	[]
All breakages	[]
All equipment replacements	[]
All of the above	[]
Others (specify).....	
None of the above	[]

17) Which of the following library data is maintained in your school? (Please tick where appropriate, against each method please also indicate the method you use to store data ie: Files- 1, Computer data base -2 or Both files and computer data base -3)

Data Maintained		Method of storage
New book purchases	[]
Book issue to students and teachers	[]
Book replacements	[]
Others (specify)

None of the above	<input type="checkbox"/>
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18) Which of the following store data is maintained? (Please tick where appropriate, against each method please also indicate the method you use to store data ie: Files- 1, Computer data base -2 or Both files and computer data base -3)

Data Maintained		Method of storage
New purchases of material	<input type="checkbox"/>
Damages of materials	<input type="checkbox"/>
Repairs of materials	<input type="checkbox"/>
Others (specify	<input type="checkbox"/>
None of the above	<input type="checkbox"/>

19) How are the minute and records of meetings held in the school kept?

- In a file In a computer In both files and computer
 None of the above

(c)Control

(i)Financial management

20 (a) Who is responsible for maintaining school financial records?(Please tick where appropriate)

- Bursar/Accounts clerk Head teacher

21(b) How is the data on receipts and expenditure of school money kept? (Please tick where appropriate)

- In accounts books In files In computer data base
 In accounts books and a computer database In files and a computer database

(ii)Staff absence control

22) Which of the following methods do you apply to monitor the staff daily attendance to duty and exit from work? (Please tick where appropriate)

- Staff records their time and time out in a book or file
 Gate watchman records the time in and time out of staff in a book/file

- Staff clock in and out time on a computer system. []
- Principal’s Secretary records the time []
- Others

(d)Staffing

23) During staff recruitment, how are the details of the various applicants

Maintained?

- Using a file [] Using a computer []
- Using both file and a computer database []

SECTION D: Perceived benefits of use of IT on management tasks and processes

24) To what extent to you agree with the following statements?

(SA – Strongly agree, A – Agree, UD– undecided, D – Disagree, SD– strongly disagree).

Please tick against the appropriate letter in the provided boxes

Statement	SA	A	UD	D	SD
If computer based databases are used, there is minimal data losses through misplacement; as compared to when manual filling systems are used					
It is faster to access required information in computer based databases compared to manual filing systems					
Computer based databases are more economical to storage					

space compared to manual filing systems.					
It is easy to edit information in computer based information system compared to manual filing systems.					
Computer based data systems allow networking of data from different offices which is not possible with filing system.					
It is faster to process information using computer systems than when using manual system.					
Computer based systems enhance accuracy in data processing compared to manual data processing					
Computer based information systems increase the efficiency in decision making					
Computer based information systems increase the quality of communication					
Computer based data systems increase coordination between teachers compared to manual systems					

25) What suggestions can you give for effective integration of ICT in management processes and tasks in secondary schools?

- i).....
- ii).....
- iii).....
- iv).....
- v).....
- vi).....

SECTION E: Barriers to the adoption of IT in management processes .

26) Which category of in-service course on Information Technology related to computers have you taken (Please tick where appropriate)

- Basic training [] Intermediate training [] Advanced training []
 None []

27 (a) How many teachers in your school have undergone in-service training related to information technology and use of computers?

None [] 1-3 [] 4-6 [] 7-9 [] <=10 []

28 (b) How many subordinate staff in your school have undergone training on computer related information technology? [] None []

29) How many computer technicians do you have in your school? [] None []

30) Which of the following sources of power do you have in your school? (Please tick where appropriate)

Electricity [] Generator [] Solar []

Others (specify)_____

None of the above []

31) In your opinion, what challenges does your school face in integrating ICT for management processes and tasks?

i).....

ii).....

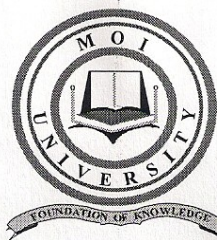
iii).....

iv).....

v).....

vi).....

Thank you for your co-operation



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*OFFICE OF THE DEAN
SCHOOL OF EDUCATION*

REF: MU/SE/PGS/54

DATE: 10th April, 2010

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

Dear Sir/Madam,

RE: RESEARCH PERMIT IN RESPECT OF MUTHOKA M. KENNEDY
~ EDU/PGEP/1001/08


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

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

“Levels of Integration of Information Communication Technology in Management Tasks and Processes in Secondary Schools in Kangundo District, Kenya.”

Any assistance given to him to facilitate the successful conduct of his research will be highly appreciated.

Yours faithfully,


DR. I. N. KIMENGI
DEAN, SCHOOL OF EDUCATION

RESEARCH PERMIT

PAGE 2

THIS IS TO CERTIFY THAT:

Prof./Dr./Mr./Mrs./Miss.....KENNEDY
MUTHOKA

of (Address)MOI UNIVERSITY
P.O. BOX 3900 ELDORET

has been permitted to conduct research in.....

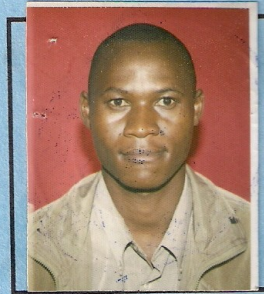
.....Location,
KANGUNDO.....District,
EASTERN.....Province,

on the topic.....LEVELS OF INTERGRATION OF
INFORMATION COMMUNICATION TECH.
IN MGT TASKS & PROCESSES IN SECONDARY
SCHOOLS IN KANGUNDO DISTRICT,
KENYA.

for a period ending.....30TH AUGUST, 2010

PAGE 3

Research Permit No.....NCST/RRI/12/1/SS/392
Date of issue.....11/05/2010
Fee received.....SHS 1,000



Kennedy Muthoka
Applicant's
Signature

[Signature]
Secretary
National Council for
Science and Technology