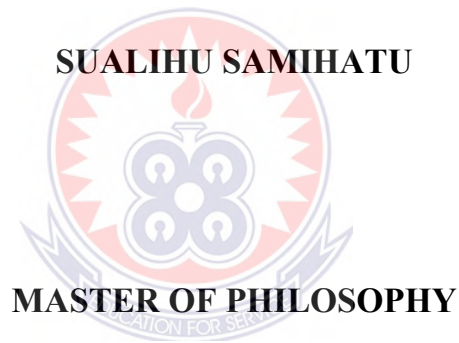**UNIVERSITY OF EDUCATION, WINNEBA**

HEAD TEACHERS' UTILISATION OF ICT IN MANAGEMENT OF BASIC SCHOOLS IN THE SAGNARIGU MUNICIPALITY

SUALIHU SAMIHATU

MASTER OF PHILOSOPHY

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A thesis in the Department of Educational Administration and Management, Faculty of Educational Studies, submitted to the School of Graduate Studies in partial fulfilment of the requirements for the award of the degree of Master of Philosophy (Educational Administration and Management) in the University of Education, Winneba

SEPTEMBER 2022

DECLARATION

Student's Declaration

I, Samihatu Sualihu, declare that this thesis, with the exception of quotations and references contained in published works which have all been identified and duly acknowledged, is entirely my own original work, and that it has not been submitted, either in part or whole, for another degree elsewhere.

Signature: ………………………………..

Date: …………………………………

Supervisor's Declaration

I hereby declare that the preparation and presentation of this thesis were supervised by me in accordance with guidelines and supervision of thesis as laid down by the University of Education, Winneba.

Supervisor's Name: PROF. STEPHEN ANTWI DANSO

Signature: …………………………..

Date: …………………………………..

DEDICATION

To my dear father, Ahmed Sualihu, and my one and only uncle and counsellor, Mr.

Abdul Razak Baako.

ACKNOWLEDGEMENTS

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ABSTRACT

The purpose of this study was to investigate head teachers' utilisation of ICT in the management of basic schools in the Sagnarigu municipality in the northern part of Ghana. The study employed quantitative approach and descriptive survey design. The population comprised the head teachers of basic schools in the Sagnarigu municipality. Stratified and simple random sampling techniques were used to select head teachers of primary and junior high schools. Questionnaire was developed to gather data from the respondents. Steps were taken to check the validity and reliability of the research instrument prior to its administration. Pre-testing was conducted and Cronbach reliability co-efficient was used to check the reliability, which was found to be r=0.89. The statistical package used to analyze the data was SPSS version 23. Descriptive and inferential statistics were used to analyse the data to answer the research questions and test the hypotheses respectively. The socio-demographic data of the respondents and the research questions 3 and 4 were analysed using frequencies and percentages. Conversely, mean and standard deviation were used for the analysis of data for the first and second research questions. The hypotheses one and two were tested using correlation and t-test respectively. The finding of the study showed that head teachers have average knowledge and skills in the use of ICT. It also emerged that the level of utilisation of ICT in managing the schools is not high. Again, the study revealed that some factors serve as drawbacks to the head teachers' usage of ICT in managing their schools. The results also showed statistically significant correlation between head teachers' knowledge and skills in ICT and level of utilization. Lastly, the study found a statistically significant difference in the male and female head teachers' knowledge and skills in ICT. It can be concluded that the head teachers in the municipality only make marginal use of ICT in the management of the basic schools. The study therefore recommends that head teachers of the basic schools in the Sagnarigu Municipality should be given training in ICT to enable them incorporate ICT in the administration and management of their schools.

CHAPTER ONE

INTRODUCTION

1.0 Background to the Study

Basic school being the first level of education receives much attention as its quality has rippling consequences on the next levels of education of students. This view makes management of basic school education very essential. Heads of basic schools, therefore, have core responsibilities clearly cut out for them; they are staff personnel services, pupils personnel services; curriculum and instructional development, improvement and appraisal, financial and business management, maintenance of school-community relationship and general duties (Esia-Donkor, 2014; Ojo & Olaniyan, 2008). Heads of schools' leadership and management roles are essential for schools in both developing and developed countries (Bush & Jackson, 2003). Efficient leadership is required to perform these functions in order to achieve educational goals and objectives. The twenty-first century has seen an increased acknowledgment of the significance of effective leadership, management and administration for the successful operation of educational institutions (Bush, 2011). This implies that the issue of leadership is very crucial in management and administration, especially human resources management and development, since the art of leadership transcends all aspects of life (Sunday & Nsobiari, 2016). The personality characteristics demonstrated also go a long way to promote school leaders effectiveness and that accounts for the need for leaders to demonstrate good attitude and behaviour at school (Ibukun, Oyewole & Abe, 2011).

Bret and Bogenschneider (2016) states that leadership is the process of influencing others to understand and agree about what needs to be done and how to do it, and the process of facilitating individual and collective efforts to accomplish shared objectives. According to Sunday and Nsobiari (2016), leadership is seen as a process of influencing

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a group towards the achievement of goals and the leader is the one who has the capacity to influence others and possesses managerial authority (Bodla & Nawaz, 2010; Hariri, 2011). Educational leaders are considered as pillars of the educational system and also the major agents in the promotion of school effectiveness. Maintaining quality and standards in education depends, largely, on the extent to which heads of schools effectively carry out their leadership responsibilities (Ibukun, Oyewole & Abe, 2011; Suaka & Kuranchie, 2018). Head teachers are considered the chief executives of their various educational institutions, hence, they are responsible for whatever transpires in the schools (Oyedeji & Fasasi, 2006). They are, therefore, supposed to assign various duties to staff members for productive performance. For Ojo and Olaniyan (2008), the role of the school head is seen in all facets of the general duties of school administration. They rally students, teachers, parents, community members and other stakeholders around a common goal of raising students' performance. In the contemporary time, these functions can be effectively undertaken through the use of Information and Communication Technology (ICT). Among other things, in basic schools, ICT can be utilized to enhance effective leadership and management in schools and widen interactions with pupils, families and the wider community in a home environment to help widen pupils' learning opportunities (DfES, 2013).

The head teachers then require leadership skills and knowledge and ICT competencies to exercise the authority to pursue strategies that help in the effective running of schools. As an administrator and leader, the school head determines the success or failure of the educational institution. According to Usman and Dangara (2016), school leaders control human and material resources of schools, and that their position is so important that the school cannot exist without it. Thus, school leaders are seen as supervisors, managers, school climate developers and change facilitators.

Prior to the widespread use of Information and Communication Technology (ICT), head teachers used manual means in performing their responsibilities. Alex (2013) contends that school managers recorded and monitored activities manually. However, the use of ICT in school has become widespread in many countries throughout the world now. The extent to which ICT has been incorporated into the school systems varies extensively, from simply as a tool to produce documents to one that is fully integrated into the entire school management practices (Osodo, Indoshi & Ongati, 2010). It is globally accepted that the quality of teaching and learning must be a central preoccupation of all those entrusted with the positions of leadership in schools (Southworth, 2004). In contemporary times, without the use of ICT, head teachers may not be able to perform their duties in a manner that will aid accomplish their goals for their schools. Reffel and Whitworth (2002) hold the view that the ability of school heads to use computers effectively has been essential part of their administrative functions. School leaders as heads are supposed to be competent in ICT to enhance their roles as leaders or stewards. This is because for school leaders to be effective, they need technological support and visionary leadership abilities (DiPaola & Hoy, 2008).

Ajayi (2009) posits that ICT is indispensable in educational administration as its application makes schools more effective. The advantages that come with the use of ICT help schools run smoothly. Use of ICT in administration of schools helps to improve school standards, financial status and co-curricular activities (Sang, Valcke, van-Braak & Tondeum, 2010). Zainally (2008) contends that head teachers' use of ICT enhances the performance of their duties. For instance, using ICT between schools and their stakeholders becomes more direct and efficient alleviating the manual collection and dissemination of data for school improvement (Kawadi, 2017). The utilization of ICT also enhances the schools' achievements in administrative, financial and

instructional management while non-usage of ICT, therefore, results in inefficient running of schools (Oyier, Odundo, Khavugwi & Wangui, 2015). This may account for Mangal and Mangal's (2009) assertion that in the era of ICT, school leaders are not expected to use the traditional and manual means of performing school administrative responsibilities. They need to incorporate ICT into the administration of their schools to ensure efficiency and effectiveness.

Studies have established areas in school management where ICT has been deployed and used by some school leaders. According to Maki (2008), ICT integration is very essential for personnel management, student management, resources management, financial management and general management. These are major areas of school management that ought to be perform well to ensure smooth administration. It has also been found that ICT applications are used by heads in decision making process, information storage as well as online application (Afzaal, 2012). While Oyedemi (2015) discovered an extensive use of ICT in schools as instructional, communicative and informative resource tools. A study conducted by Katitia et al (2019) found that school heads used ICT application in budgeting, collection and recording of student data, and general record keeping. The school utilize ICT in performing many administrative functions in the schools. A study conducted in Ghana also revealed that computer use for administration purposes include typing terminal examination questions, entering academic records of pupils, storing vital school information such as school infrastructure, enrolment and teacher attendance (Alhassan, 2014).

Over the last decades, successive governments of Ghana as a developing country, have made frantic efforts of integrating ICT in education to improve its education system in particular, to contribute to the wider national development. ICT for development was

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initiated to enhance the use of ICT in administration of schools and teaching and learning. Again, in a bid to improve the use of ICT by schools, the government introduced and implemented the Ghana ICT in Education Policy in November 2008. The policy sought to create the enabling environment for achieving the vision of transforming the country in the Information Technology age. Again, the government of Ghana through the Ghana Education Service (GES) had a collaboration with rLG to train teachers in ICT 2009 (Alhassan, 2014). Education officers and heads of schools also received training on the use of ICT for administrative functions. Consequently, a number of laptops and other computers were provided to schools and teachers to enhance their operations in the school. Despite the relevance of ICT in school management function as stated above, Selwood (2015) claims that the frequency with which head teachers in elementary schools utilize ICT in school management is low. This finding is consistent with Abuga's (2014) discovery that the majority of head teachers (52 percent) did not utilise any type of ICT in their schools. These findings portray the low level of usage of ICT in managing basic schools.

All the frantic efforts by government notwithstanding, studies have found, among others, that the head teachers relied on manual system to manage their schools (Buabeng-Andoh, 2015, Manaseh, 2016). Similarly, Adade, Dampson, Quashigah and Eshun (2018) carried out a quantitative study on ICT usage in the performance of school administrative functions. In their study, a questionnaire was used to gather data for analysis and the study found that most basic school administrators still depended on the manual system of managing students records in this 21st century where the use of ICT is paramount. These discoveries support an assertion that in spite of the drastic revolution in the way in which information and records managed through the use of ICT, it is a difficult task for most basic schools in Ghana (Azameti & Adjei, 2013). This

problem could be attributed to reasons such as inadequate number of computers and their accessories. To buttress this point, Alhassan (2014) revealed that the average number of computers available for school administration is one. This situation certainly would not allow school heads to manage their schools by the use of ICT. The lack of ICT application in the management of schools could lead to a lot of challenges in administration hence educational goals and objectives cannot be achieved. However, as it stands, little is known about the general situation in the basic schools across the country, especially rural settings of the country.

School records management plays a critical role in the efficient and successful management of students' records. Electronic records, according to Coetzer (2012), are a critical asset in ensuring that schools are successfully and efficiently managed, as well as responsible to its staff, students, and the community it serves. A competent records management system guarantees that an institution satisfies its records keeping obligations by capturing and preserving the data needed to prove its actions and existence (Adu-Oppong & Asante, 2014). The mechanisms of getting requisite data on the various actors in the basic education system as well as keeping and managing the data are very essential. This stems from the fact that data or information is the blood of institutions which should be secured and managed well for it to be used for its intended purpose and for the schools to achieve their intended goals.

In the basic schools, a lot of data is created; records concerning students' academic activities, staff duties, course material, log books, financial transactions, and the school's general administration should all be appropriately created, managed, stored, and evaluated using ICT (Gama, 2010). The data is used for various purposes and that makes it important for head teachers to handle it very well. In the event of the head

teachers not handling the data used can affect not only the students or staff but also the head teachers themselves as well as the school. It is noteworthy that all basic schools, in both developed and developing countries, need the essential services of ICT in order to function effectively and efficiently. Osodu et al (2010) contends that in spite of the fact that ICT use in school had become a prevalent practice in many countries, its implementation has been different. While in some schools, ICT is a mere use of ICT tools to produce documents, in other schools, it is fully integrated into the whole school management. However, the situation in the basic schools in all districts, municipalities and metropolis of Ghana is unknown. However, as it is not possible to cover all administrative districts in the country, this study concentrated on an emerging district. Thus, as whether all basic school heads employ ICT in the performance of their administrative and managerial responsibilities ought to be known especially those in the emerging districts such as the Sagnarigu municipality in the Northern region of Ghana to enhance policy formulation and implementation. There seems to be inadequate research on the issues under investigation in the district even though it also has many basic schools that need to be managed through the use of ICT.

1.1 Statement of the Problem

With the emergence of Information and Communication Technology (ICT), the world and its sectors such as education are progressing at a rapid rate. The lack of or inadequate use of ICT in the management of schools has been recognized as a global issue that has attracted the attention of researchers all over the globe. Oyeniran and Onikosi-Alliyu (2016) assert that although ICT has been embraced in school management, it is not applied uniformly. Whiles in some countries, schools adopt it in their managerial duties, others do not. Studies such as Gedwar (2016) conducted in Kenya, Katitia et al (2019) conducted in Uganda, Thankgod and Vulasi (2020)

conducted in Nigeria and Goyal, Durohit and Bhagat (2010) carried out France found low utilization of ICT in the management of schools. From these studies, it is apparent that some countries' schools have not fully incorporated ICT in the performance of school administrative and managerial responsibilities.

Hence, school leaders ought to utilize ICT in the administration and management of their institutions to enhance productivity (Adu & Ngulube, 2017). ICT is, therefore, very important to heads of institutions in their administration as well as in the teaching and learning process. The use of ICT in management of basic schools provides opportunities to change the way records are kept, the way information is received and disseminated and the manner teachers are validated monthly for payment of salaries. By the nature of basic school head teachers' duties, a lot of records is generated, used and kept for varied reasons. The head teachers keep records about pupils' academic activities, responsibilities assigned to staff, course contents, log books, financial transactions, and the general administration of the school and all these could be properly generated, organized, preserved and appraised through the use of ICT (Gama, 2010). It is an indisputable fact that effective record keeping is vital to educational development and that it would be an impossible task to plan and administer any institution without proper record keeping.

The situation in some parts of Ghana regarding the head teachers not using ICT for school administration is not far-fetched the few studies such as Alhassan (2014), Adade, et al (2018) have unveiled that those that pertain in basic schools at the southern part of the country. The studies discovered that most basic schools in Ghana have not embraced the use of ICT in school management. Basic schools in Ghana are unable to use ICT in school management due to insufficient infrastructure to allow the adoption and implementation of a fully effective ICT system in the education sector. Adade et al (2018) found that most basic school administrators still depended on the manual system of managing students records in this 21st century where the use of ICT is paramount. However, in the Sagnarigu municipality, systematic investigation had not been done to know the situation of ICT usage in administration of basic schools. This is a district that is located in one of the regions in the country which is considered to be domiciled by low income earners. As the study by Tagbotor, Adzido and Agbanu (2015) found that many schools in not quite poor districts do not have access to power, internet, mobile service and other relevant ICT tools that would enable them to use ICT in teaching and learning as well as administration and management. Consequently, schools in such communities have it difficult to implement and utilize ICT in the management of their educational records and operations. Besides, during a stakeholder consultative meeting help in 2019, the District Director of Education bemoaned the low usage of ICT in teaching and learning as well as managing the schools in the municipality. According to her, the situation hinders communication between her office and the various schools in the municipality.

In spite of the benefits of using ICT in school administration and management, it is not much used which does help in achieving educational goals. Without the use of ICT in the administration and management of schools, performance of administrative duties such as information storage and retrieval, planning and execution of agendas and other managerial duties may not be enhanced.

The inability of basic schools to utilize ICT in administration brings about a lot of problems to the stakeholders of education. The society or country has set educational goals to be achieved through implementation of the curriculum. Appropriate management of schools ensures implementation of curriculum and the use of ICT in this stride is key. The failure of school heads to utilize ICT in the administration and management of schools can also affect the quantity and quality of students they produce for the senior high schools. It is therefore essential for a study to be conducted on headteachers' use of ICT in management of basic schools to provide empirical data to help solve the problem of ICT utilization in the administration and management of basic schools.

The quest to have empirical evidence of ICT utilization in the administration and management of basic schools have made some researchers to conduct scientific studies to that effect. For instance, Adade, et al (2018) studied administrators use of ICT in managing students records while Azameti and Adjei (2013) investigated academic records management in institutions. Also, the study carried out by Alhassan (2014) aimed to ascertain availability and use of ICT tools for school administration purposes whereas Abuga (2014) surveyed the type of ICTs the school used in their school administration.

Other studies that focused on different aspects of ICT integration into school administration include Hossein (2008) who examined obstacles inherent in accessing and using ICT in school administration; Afaiyi and Ekundayo (2009) studied how ICT was applied in secondary schools in Nigeria; Jackson and Mainai (2016) explored head teachers' preparedness to use ICT in school administration; and Kaindio and Wagithunu (2014) examined the skills of heads of schools in integrating ICT in pre-school education in Kenya. These and other studies reviewed point out that the use of ICT in the management of schools is an essential issue to the stakeholders of education such as education authorities, teachers, students, researchers and others which ought to be taken seriously.

From the previous studies, the concentration has been on incorporation of ICT in the management of senior high schools as well as the tertiary institutions with very little concern about what goes on at the basic schools although the latter also manage data about the school, staff, students and many other areas of school management. Besides, the studies that have explored school leaders' use of ICT in performing administrative functions did not segment to unveil the extent to which ICT is used to manage the respective functions of the school leaders. Furthermore, previous studies have not sufficiently dealt with the difference between male and female head teachers in terms of utilisation of ICT in the municipality. Knowledge or findings of this would help stakeholders to channel efforts to train more females or males as the case may be. This study therefore specifically examined the extent to which ICT is employed to perform general administrative duties, personnel functions, student functions and financial functions. This was necessary as the differential application of ICT in the management of the functions of the head teachers have implications for policy and practice. Furthermore, review of previous studies discovered that little research has been

conducted to reveal head teachers' knowledge and skills of ICT and the extent to which head teachers use ICT in their administrative practices in basic schools. More specifically, the previous studies and search of literature unveiled paucity of information regarding head teachers' utilization of ICT in management of basic schools in the Sagnarigu municipality in the Northern region of Ghana and this is a gap in literature. In other words, little is known about the extent to which basic schools head teachers in the municipality use ICT and the associated factors in the management of the basic schools in the municipality. It is against these backdrops that the present study was conducted to examine head teachers' utilization of ICT in the management of basic schools in the Sagnarigu municipality to help the education sector to evaluate the impact of its ICT policy in basic schools in the country.

1.2 Purpose of the Study

The purpose of the study is to investigate the utilization of ICT by basic school head teachers in the management of basic schools in the Sagnarigu municipality to know what needs to be done to improve the situation for school effectiveness.

1.3 Objectives of the Study

Specifically, the study sought to;

1. examine head teachers' knowledge in ICT in the management of basic schools in the Sagnarigu Municipality.

2. determine the level of utilization of ICT by head teachers in the management of basic schools in the Sagnarigu Municipality.

3. ascertain the drawbacks to the usage of ICT by head teachers in the management of basic schools in the Sagnarigu Municipality.

4. identify management techniques that could be adopted to improve the usage of ICT by head teachers in the management of basic schools within the Sagnarigu Municipality.

5. compare male and female head teachers' utilisation of ICT in the management of the basic schools in the Sagnarigu Municipality.

1.4 Research Questions

The following research questions guided the conduct of the study:

1. What ICT knowledge do head teachers in the Sagnarigu Municipality possess in the management of basic schools?

2. To what extent do the head teachers utilize ICT in the management of basic schools in the Sagnarigu Municipality.

3. What factors serve as drawback to the head teachers' use of ICT in managing basic schools in the Sagnarigu Municipality.

4. What management techniques could the head teachers adopt to improve ICT usage in the management of basic schools in the Sagnarigu Municipality.

Hypotheses

The following hypotheses were tested in the research:

1. Ho: There is no statistically significant correlation between head teachers' knowledge and their level of ICT utilization in management of the schools.

2. Hi: There is a statistically significant correlation between head teachers' knowledge and their level of ICT utilization in management of the schools.

3. Ho: There is no statistically significant gender difference in head teachers' utilization of ICT in the management of the schools.

4. Hi: There is a statistically significant gender difference in head teachers' utilization of ICT in the management of the schools.

1.5 Significance of the Study

In the contemporary era, the use of ICT has been accepted as the way to go in administration and management of institutions including educational ones such as basic schools. Consequently, undertaking a study about the use of ICT in the administration and management of basic schools in a municipality in the northern region of Ghana is significant to stakeholders of education such as managers or heads of institutions, educational planners, policy-makers and others.

Firstly, the findings of the study have revealed the state of ICT usage in the administration and management of basic schools in the municipality. The municipal and regional directorates of education would be aware of it and then take steps to improve the situation to benefit the schools and staff and students. The outcomes of the study are also beneficial to educational planners and policy makers to make appropriate decisions to improve head teachers' utilization of ICT in administration and management of schools. The results of the study can inform the Ministry of Education (MoE) and the Ghana Education Service (GES) to strengthen their policy on ICT for schools.

The findings could also inform non-governmental organizations, prominent personalities and other philanthropists in the municipality to assist in the provision of ICT resources and training of heads teachers of the basic schools to acquire essential ICT knowledge and skills to improve their administrative and managerial functions in the schools and to ultimately improve the schools' performance. When head teachers of the basic schools are trained in the use of ICT for the management of schools, it will go

a long way to help achieve the educational goals of the country and be extension, the Sustainable Development Goal 4 on education.

To head teachers, teachers and students of the basic schools in the municipality, the study would help strengthen the advocacy role they play in getting assistance for ICT resources to help both teaching and learning and administration and management of their schools. Acquisition of more ICT resources from other stakeholder will help them to deliver their responsibilities to train students well to benefit the country.

The research findings add to the literature available to heads of schools' use of knowledge in the administration and management of schools. Most of the studies on ICT utilization in the administration and management of schools had been on senior high schools and that of the tertiary institutions. So, the findings of this study add to the stock of studies on what are known about ICT usage in management of basic schools which expand literature on the phenomena. Now, the extent of utilization of ICT in the management of the various functions such as general administrative functions, student personnel functions, staff personnel functions, financial functions at the basic school have been uncovered and added to extant literature.

Besides, the outcomes of the study are relevant to future researchers. The study has provided directions for future research. The areas that this study could not cover have been indicated for educational authorities, researchers and others interested in educational issues to know the situation of the basic head teachers' use of ICT in the administration and management of schools. Future researches may be conducted on those issues to help widen the scope of the study. Based on the suggestions that have been offered by the study, future research may be conducted using both qualitative and quantitative approach to gather adequate data on head teachers' utilization of ICT in the

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administration and management of basic schools to expand literature of the issues studied.

1.6 Delimitation

The study was restricted to only basic schools in the Sagnarigu Municipality in the northern region of Ghana. All public basic schools in the municipality constituted the study population. Again, the study used only head teachers of the primary schools and junior high schools in the municipality.

The major issues that were covered in the study were head teachers' knowledge and skill in ICT as well as level of utilization of ICT in the management of basic schools. The utilization of ICT in the management of basic schools was considered from the various functions (administrative, staff, student and financial functions) respectively. The challenges encountered in the use of ICT and how the challenges could be handled to improve ICT usage in the management of basic school were covered in the study.

Furthermore, the study was delimited to three theories which are the Technology Acceptance Model (TAM), Theory of Planned Behaviour (TPB) and Unified Theory of Acceptance and Use of Technology (UTAUT). These theories provided strong basis to conduct the quantitative study in the Sagnarigu municipality in the Northern region of Ghana. Ideas from the three theories aided greatly to help explain and understand the head teachers' perceived benefits and use of ICT in managing their basic schools. Concerning the methodology, the study employed the quantitative approach and consequently descriptive survey design. In view of the nature of the issues embedded in the study, quantitative approach and descriptive survey design were deemed appropriate for the exercise. These methodologies enabled the researcher to gather

quantitative data from numbers of both male and female head teachers in the municipality to answer the research questions and also test the hypotheses.

1.7 Definition of terms

The following terminologies as used in the work have been explained below:

Headteacher refers to any teacher who has been officially assigned by GES to manage a basic school. He is in charge of the day-to-day supervision of the other teachers in the school.

Information and Communication Technology: refers to the use of technology in managing and processing information with the use of electronic computer system and computer software to convert, store, protect, process, transmit and retrieve information.

Information and Communication Technology Tools refers to computer hardware and software that are used in the recording, processing and management of the activities of the schools. The hardware includes the physical computer while to software includes the computer applications.

Management refers to coordination and administration of tasks in the school to achieve goals.

Basic Schools refers to the basic schools are defined as primary and Junior High School.

Public Basic Schools refer to the public basic schools are defined as government primary and Junior High School.

1.8 Organization of the study

This part of the chapters concerns how the chapter has been organized. The research is organized into five chapters. Chapter One presents the introduction of the study, which

covers the background to the study, statement of the problem, the purpose of the study, the study objectives, research questions, significance of the study, delimitation, definition of terms and organisation of the study. Chapter Two presents the literature review which consists of three key areas such as theoretical framework, conceptual review, empirical review, conceptual framework and summary of the chapter. The methodology is presented in the third chapter. The methodology covers the research paradigm. Research approach and research design. The description of the study area, the study population, sample and sampling procedure, research instruments, validity and reliability of the instruments, data collection procedure, data analysis plan, and ethical consideration are also covered in the chapter three.

Chapter Four presents the research findings and discussions of the data gathered. The chapter is segmented into two: the study results and the discussion of the findings. Chapter Five, which is final chapter presents summary of the work, provides conclusions based on the findings and the recommendations for practice. The final issues in the chapter are the Limitations of the study and suggestions for further research.

CHAPTER TWO

LITERATURE REVIEW

2.0 Introduction

The Chapter One having introduced the phenomena of the study, this chapter presents theoretical and empirical information about the use of ICT in administration and management of schools. The literature review hinges on four main strands, which are theoretical framework, conceptual review, empirical review and conceptual framework. The literature review seeks to widen readers' knowledge on the use of ICT in administration and management of schools as well as to identify gaps in extant literature which the present study sought to address concerning head teachers' utilization of ICT in the management of basic schools in the Sagnarigu Municipality.

2.1 Theoretical framework

Three main ICT theories were used to underpin the study are Technology Acceptance Model (TAM), Theory of Reasoned Actions (TRA), and Unified Theory of Acceptance and Use of Technology (UTAUT).

2.1.1 Technology Acceptance Model (TAM)

The first theory which is deemed to be relevant to the study of headteachers' utilization of ICT in the administration and management of basic school is TAM. The Technological Acceptance Model (TAM) developed by Davis (1986) is used as a theory to underpin the study. Davis (1989) presented a theoretical model which aims to predict and explain ICT usage behaviour, that is, what causes potential adopters to accept or reject the use of information technology. Davis (1986) claims that TAM is made up of two fundamental determinants namely Perceived Ease of Use (PEOU) and Perceived Usefulness (PU). The perceived usefulness and perceived ease of use are the

fundamental determinants of system usage, and predict attitudes toward the usage of the system, that is, the user's willingness to use the system. Also, the perceived ease of use is the extent to which a person is confidently sure that they will be able to use something effectively that is when they will consider using it. That is, when headteachers of basic schools believe that, they have the competence and knowledge to use ICT tools effectively, they are likely to use them in the performance of their administrative and managerial responsibilities. On the contrary if head of basic schools do not think they will find it difficult to use they may not venture to use it. Perceived usefulness is the extent to which one is certain that using a particular thing will improve productivity (performance wise). That is, the perceived usefulness refers to "the degree to which a person believes that using a particular system would enhance their job performance", and perceived ease of use refers to "the degree to which a person believes that using a particular system would be free of effort" (Davis, 1989, 320). Here, when heads of basic schools believe that using a particular technology will enhance productivity of effective administration and management of their schools, they are likely to use it. TAM claims that performance usefulness is an influencer to performance ease of use. This is because when users find a technology easily accessible, then they will see the need or essence of using it.

It is gathered from the theory that the headteachers' acceptance and usage of ICT in the administration and management of basic schools would depend largely on the TAM two theoretical constructs, thus, perceived usefulness and perceived ease of use of ICT.

The Technological Acceptance Model (TAM) is represented in Figure 1 below, as developed by Davis (1989), has actual system use (ASU) as the main variable. Davis defined ASU as a person's observable usage of a particular system (e.g., technology).

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Figure 2 suggests that ASU is a direct function of behavioural intention to use (BIU) a technology, which Davis defined as the degree to which a person has formulated conscious plans to perform or not to perform some specific future behaviour. Behavioural intention to use (BIU) is in turn, a function of attitude toward using (ATU) and perceived usefulness (PU) (Korpelainen, 2011).

Attitude toward using (ATU) is an individual's positive or negative feeling about performing the target behaviour (Davis, Bagozzi & Warshaw, 1989), while PU is the degree to which a person believes that using a particular system would enhance their job performance (Davis, 1989). According to Figure 1 below, PU is influenced by perceived ease of use (PEU), which Davis defined as the degree to which a person believes that using a particular technology would be free from effort. Figure 2 below further suggests that ATU is determined jointly by PU and PEU.
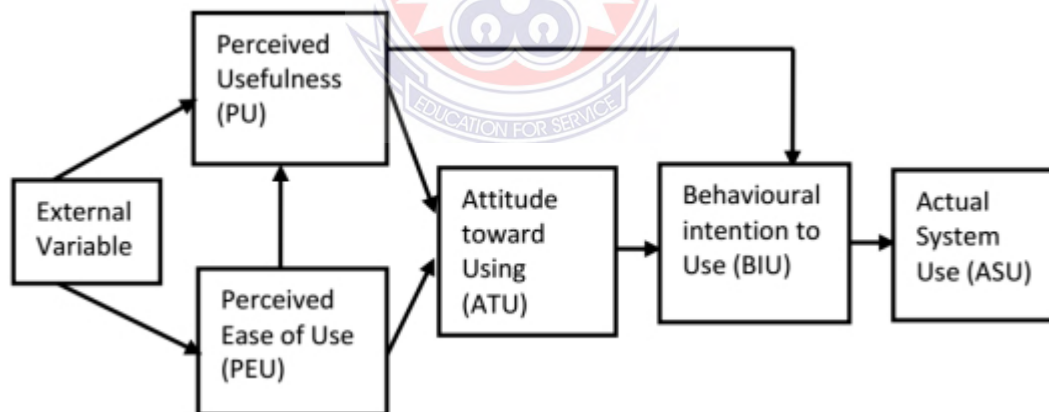
Figure 1: **The Technology Acceptance Model (TAM)**

Source: Adapted from Davis et al. (1989).

In Figure 1, TAM theories that both PU and PEU are influenced by external variables such as system characteristics, development process, and training. However, other explanatory variables notwithstanding, the proponents of TAM such as Davis et al. (1989) posit that PU and PEU are the two fundamental determinants of ASU. They

argue that if users find a technology useful (i.e., having PU) and easy to use (i.e., having PEU), then they develop a positive attitude toward using (ATU) this technology. All these will eventually lead to the behavioural intention to use (BIU) the technology and finally the actual use of the technology (ASU) (Korpelainen, 2011).

Relating TAM to this study, it is assumed that the idea that people such as head teachers' use of ICT in the management of basic schools is influenced by external variables such as system characteristics, development process, and training. Notwithstanding TAM assumed that the two main factors that determine the actual use of ICT by head teachers in managing schools are the perceived usefulness of ICT and the perceived ease of use of ICT by the head teachers to manage the schools. For instance, the theory assumes that head teachers who perceived ICT to be useful in administering and managing school records or data is likely to adopt and implement ICT tools for their operations while the head teachers who perceived ICT not to be useful may resort to manual system of managing basic schools. Again, head teachers who perceived ICT as easy to use is likely to use it in managing their schools while those who perceived ICT as difficult to use is more likely to resort to the paper system of managing the basic schools.

2.2 Theory of Reasoned Actions (TRA)

The second theory that is relevant to this study is the Theory of Reasoned Actions (TRA). The theory originates from social psychology, and it is a special case of the Theory of Planned Behaviour (TPB) (Ajzen, 2010). Fishbein and Ajzen (1975)

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developed TRA to define the links between the beliefs, attitudes, norms, intentions, and behaviours of individuals. The theory assumes that a person's behaviour is determined by the person's behavioral intention to perform it, and the intention itself is determined by the person's attitudes and his or her subjective norms towards the behaviour. The subjective norm refers to "the person's perception that most people who are important to him think he should or should not perform the behaviour in question" (Fishbein & Ajzen, 1980, 302). Ajzen and Fishbein's (1980) book is focused on the prediction and understanding of human behaviour to help in solving applied problems and making policy decisions. Ajzen and Fishbein (1980) developed the Theory of Reasoned Action (TRA) as shown in Figure 2 below.
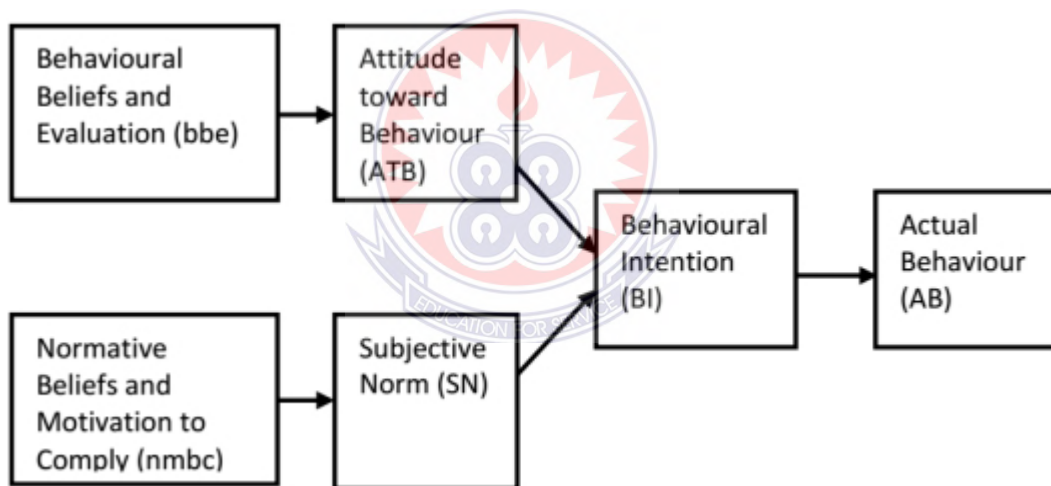
Figure 2: **The Theory of Reasoned Action**

Source: Adapted from Ajzen and Fishbein (1980)

The TRA model has actual behaviour (AB) as its main variable. Ajzen and Fishbein defined AB as an individual's observable response in a given situation with respect to a given target. As per Figure 2, AB is postulated to be determined by behavioural intention (BI), which Ajzen and Fishbein defined as the cognitive representation of an individual's readiness to perform intended behaviour. TRA theorizes that BI in turn, is

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jointly determined by the individual's attitude toward the behaviour (ATB) in question and the pertinent subjective norm (SN) (Korpelainen, 2011). According to Ajzen and Fishbein (1980), ATB is the degree to which a person has a favorable or unfavorable evaluation or appraisal of the behaviour in question, while SN is the perceived social pressure to perform or not to perform the behaviour.

In relating the theory to the present study, ATB is the degree to which head teachers in basic schools have a favourable or unfavourable evaluation or appraisal of the use of ICT in the management of basic schools while subjective norm is their perceived social pressure that society today has on them to use modern technologies such as ICT in managing schools. The theory, therefore, defines head teachers' readiness with respect of the use of ICT in managing basic schools.

Figure 2 also indicates that ATB is influenced by behavioural beliefs and evaluation (BBE). Behavioural beliefs (BB) are the individual subjective probability that performing the target behaviour will result in consequences, and evaluation is a rating of the desirability of the outcome (Ajzen & Fishbein, 1980). Ajzen and Fishbein asserted that individuals are rational decision makers who constantly calculate and evaluate the relevant behavioural beliefs (BB) in the process of determining their ATB. TRA theorises that SN is influenced by normative beliefs and motivation to comply (NBMC). Normative beliefs (NB) are the likelihood that important individuals or group approve or disapprove of performing a given behaviour, and motivation to comply (MC) is the extent to which the individual wants to comply with the wishes of the referent other (Ajzen, 1991).

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In the case of this study, therefore, head teachers use of ICT in the management of basic schools is influenced by the normative beliefs and motivation to comply (NBMC). In other words, it is based on the likelihood that important individuals or group approve or disapprove of them using ICT and their motivation to comply (MC) with the ICT use is the extent to which they want to comply with the wishes of those who approve of the ICT usage or disapprove of it.

2.3 Unified Theory of Acceptance and Use of Technology (UTAUT)

The third theory that is relevant to the study is the Unified Theory of Acceptance and Use of Technology (UTAUT). Venkatesh, Morris, Davis and Davis (2003) developed the unified model through reviewing eight models which explain ICT usage, namely TRA, TAM, the motivational model, Theory of Planned Behaviour (TPB), a model combining TAM and TPB, the model of PC utilization, Diffusion of Innovations (DOI), and the social cognitive theory. The purpose of UTAUT is to explain a user's intentions to use ICT and the subsequent user behaviour. The model considers four constructs as direct determinants of user acceptance and usage behaviour namely; performance expectancy, effort expectancy, social influence, and facilitating conditions. There are four key moderating variables namely; gender, age, experience, and voluntariness of use. The authors stated that UTAUT provides a tool for managers to assess the likelihood of success of technology introductions and to understand the drivers of acceptance in order to design interventions, which include training or marketing. UTAUT focuses on users who may be less willing to adopt and use new ICT systems (Korpelainen, 2011).

In relating UTAUT to the present study, the theory assumes that head teachers' acceptance to use ICT in the management of basic schools is influenced by four key factors namely; performance expectancy, effort expectancy, social influence, and facilitating conditions. The theory also identifies four key moderating variables that determine head teachers ICT usage namely; gender, age, experience, and voluntariness of use. The present study, therefore, sought to examine how these factors influence the acceptance and the use of ICT by head teachers in managing basic schools.

2.4 Conceptual review

The concepts that have been reviewed in this section of the literature are head teachers' responsibilities, Information Communication Technology (ICT).

2.5 The Concept of Information and Communication Technology (ICT)

The concept information and communication technology (ICT) has been viewed from different angles. According to Ghavifekr and Rosdy (2015), ICT is a term that refers to computers, software, networks, satellite connections, and other technologies that enable individuals to access and exchange information and knowledge in a number of ways. Oluoch (2016) conceives ICTs as information handling tools that are used to produce, store, distribute and exchange information. Mutumba (2005) also define ICT as the use of electronic equipment and other accessories such as computer software and hardware and other telecommunication equipment to acquire, store, process and disseminate information.

Information and communication technology is a type of technology that facilitates information-related activities. Data collection, processing, storage, and presentation are examples of such activities. These activities are increasingly involving collaboration and communication. As a result, IT has evolved into ICT: information and

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communication technology (Al Nuaimi, Al Neyadi, Mohamed, & Al-Jaroodi (2015). Baller, Dutta and Lanvin (2016) also construe ICT to mean integration of electronic devices, computers, and telecommunications. To Wortman and Fluchter (2015), in the contemporary time, the concept Information and Communication Technology (ICT) is much broader, which includes almost every type of technology the enterprises depend on to run their daily operations. Dictionary definitions of ICT include: managing a computer network, creating original web pages, digitally producing videos, designing computer systems as a consultant, selling products on the Internet, 3-D artwork, administering a company's database, coding software, providing technical support, managing projects and budgets, and writing technical documentation. Education and relevant experience are essential for any successful career, however, learning computer skills will help improve one's overall knowledge and understanding of the tasks (Wortman & Fluchter, 2015).

Chuku (2012) conceptualises ICT to be anything that permits people to get information, to communicate with each other or have an effect on the environment or digital equipment. It may consist of hardware and software types, computers, video cameras, internet, telephones, tape recorders, TV, projector, electronic whiteboard, among others. Rahoo (2021) also construes ICT to mean the totality of computers and their accessories, telecommunications equipment, multi-media and other associated technologies used in information organization, management and dissemination.

2.5.1 Uses of Information and Communication Technology

According to Korpelainen (2011), all organizations around the globe employ information and communication technology (ICT) systems in their operations. Baller, et al (2016) refers ICT to mean integration of electronic devices, computers, and

telecommunications and indicate that it causes a flood of innovations in the collection, storage, processing, transmission, and display of information, transforming the IT sector itself into a highly dynamic and expanding area of activity, creating new markets, new investments, revenues, and faster and more efficient mechanisms are used not only at work but also in other sectors to respond to changing demand patterns and changing international competitive advantage through more efficient production processes and newly improved products and services. Ohuruogu, Ikechukwu, Mong, and Chinyere (2019) denote that ICT encompasses any product that stores, retrieves, manipulates, transmits, or receives information electronically in digital form. Personal computers, digital television, email, and robots are a few examples. Nwukwe and Ucheju (2021) also refer ICT to the electronic communication devices associated with human social materials that enable people to use them for a whole range of instructional process. Similarly, Muriko (2005) submit that ICT includes tools used for gathering, storage, retrieval, use, manipulation, processing and transferring information with the aim of enriching the knowledge, developing communication, decision making and problem-solving ability of the user.

2.5.2 Information and Communication Technology (ICT) in Educational Management

Information and Communication Technology in education refers to the instruments that are used for communicating, transmitting, and obtaining information, such as software applications, internet access, local networking infrastructure, and video conferencing, as well as hardware such as computers and other devices in school administrative practices (Al-Harbi, 2014). According to Albugami (2016), ICT is a useful tool for managing academic documents since it allows head teachers to control and maintain databases, spreadsheets, and presentations. The use of ICT, particularly the computer

application such as Excel, helps head teachers and other administrators to manage data and keep accurate records in order to enhance school and classroom management (Rusten, 2009). ICT is used by school heads to achieve the task of school management in the areas of curriculum and instruction, school-community relationship and school business operation (Nwosu, Indoshi & Ongati, 2002). In conformity to that, Odera (2002) and Boit and Menji (2012) observed that for schools to have efficient implementation of computer technology in schools, there is the need to have a clear policy guideline on how to do that in the management of schools.

Administrative uses of ICT include applications of ICT in production of announcements, reports, letters for general parent-teacher association meetings, registration of students, storage of teachers and students' information as well as external data of the school (Afzaal, 2011, Mwalongo, 2011, Selwood, 2004). Studies have revealed that ICT applications are used to prepare the timetable, teaching plan, schemes of work, and students report are all of the responsibilities of teachers in administrative positions in school. Teachers in administration can use ICT to set up tests (Ghavifekr cited in Mwalongo, 2011) and as Mutisya (2017) posits ICT plays very essential roles in data gathering in educational systems as well helping to make data available and other stakeholders. The way and manner that ICT transmit data or information from a stakeholder to another is admirable than how manual means do. Mwadulo and Odoyo (2020) say that ICT in educational administration is adopted to avoid the barriers of distance and time and greatly improves accessibility to information and knowledge.

Apart from that, using ICT could help in recording school finances by including balance sheets, e-pay slips, audit reports, non-salary grants, and stock-keeping including students' assessment for future reference (Kawade, 2017; Kazi, 2012; Ghavifekr et al.

2015). Kumar, Rose and Silva (2008) cited in Oyeniran and Onikosi-Alliyu (2016) contend that areas that ICT can be used for effective school management are generally administration on payroll and financial accounting, administration of student's data, inventory management, personal records maintenance and library system. In the Ghanaian basic schools, head teachers validate their teachers every month before their salaries are paid. They also prepare accounts on the receipt and payment of the capitation that they receive from government at the appropriate times as well as all other incomes they receive. The use of ICT in preparing all these accounts should be the order of the day.

Krishuaveni and Meenakumari (2010) contend that computers can be used effectively in three areas of educational administration: student administration, staff administration and general administration. There are many ICT tools and applications that have been used extensively by educational administrators and managers. There are a variety of ICT tools that may be employed by head teachers of basic schools including: Internet, websites, software, and hardware such as printers, scanners, photocopy machines, and computers (Kazi, 2012; Kawade 2017; Mwalongo, 2011; Susmita 2007). The various ICT tools play different, related and beneficial roles in head teachers receiving, recording, storing and sending information in the performance of their administrative and management functions as prescribed by the education authorities. When ICT is used to keep student records, it aids the administrator of the school to achieve its objectives.

Information and Communication Technology offers more democratic means of handling information for administrative purposes. All levels of education, be it basic, secondary or tertiary utilize data which makes the leaders' work more ideal. Anttiroiko

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(2016) maintains that using ICT to support creativity is common in small, democratic, high-value economies focused on smartening up. Conversely, large and low-value economies (focused on reducing costs, including labour costs) are more likely to use ICT to boost productivity (at least in the short term). The ICT means of handling information helps to keep school administration records easily, accurately and efficiently. It helps in retrieving and tracing documents and records easily. It is used to collect, process, store, analyze and disseminate information. These things make ICT to enhance the daily functions of school activities, programme and solving individual or groups as well as staff development (Mohammed, 2006).

It is abundantly clear that information and communication technology (ICT) plays a significant role in the management of schools (Adade et al., 2018). As information is the lifeblood of any organization, the way and manner it is created, received, kept, accessed, and discarded is also critical to the institution's continued existence (Adade et al., 2018). As a result, essential information about an institution's internal or external operations is captured and preserved throughout time for instant use or future reference. Information created within a school or acquired from outside the school becomes a record of the school when it is documented and kept for current or future use (Quarshie, 2015). This idea underscores Ahire and Shewale's (2016) contention that the development of ICT is one of the wonderful gifts of modern science and technology that has brought about enormous changes in library and information science. Ohuruogu et al. (2019) indicate that the use of information and communication technology (ICT) in library and information work has transformed the traditional concept of libraries from a "storehouse of books to an intellectual information center," connoting the concept of an electronic library. It has ushered in a new era of library communication and facilitated global access to information across geographical boundaries. Anttiroiko

(2016) asserts that ICT is increasingly being used in libraries and information services for information acquisition, processing, and dissemination. Libraries have relied on ICT-based services to meet the diverse information needs of their patrons. All these services are handled by school administrators and managers for effective delivery of education services for students and other users. Schools have libraries that provide support services for teachers and students and if ICT is well integrated into library services, the probability that users will derive maximum benefits is high.

This is consistent with Meryo and Boit's (2012) claim that using ICT in administrative management entails utilizing technology for better planning, defining standards, implementing change, and monitoring core function results. Second, when schools automate stores, they protect assets and guarantee that they are only utilized for permitted reasons. Keeping track of school records is a time-consuming and tiresome process. ICT is in charge of all store and sub-store products/consumables, as well as the numerous information that must be recorded for these things. Obeng (2004) asserts that ICT is used to manage staff and it aids to process large volumes of data or records of staff in a fast, meticulous and impeccable way hence making it less difficult to retrieve such information. Besides, the ICT usage enhances students' admission processes. The integration of ICT into general administration of schools ensures increased efficiency and maximum use of resources (Hasan et al, 2007).

Reddi (2011) who examined the degree of ICT use in education and found that schools are integrating ICT into financial management, co-curricular activities, infrastructure, and human resource management. According to Oguta, Egessa and Musiega (2014), ICT use among headteachers improves day-to-day school administration and helps schools to improve efficiency and cope with the quickly changing environment in

managing duties. In support of this claim, Ngugi (2012) noted in an investigation into the extent of ICT use in education management in public schools that cost-effective application of ICT-related technology combined with flexibility in learning and administrative activities is critical in increasing school efficiency. Mutuma (2005) asserts that ICT helps school leaders to be effective in their managerial roles. This connotes that ICT is useful for not only teaching and learning, but also administrative use (Ukpoma, 2019) and ICT has done a lot to help in improving data gathering in the educational systems. It has also made these data more readily and widely available to school staff, students, parents and the general public through central school management web and in some countries through direct access to central or district databases by school officials, according to OECD (2005).

Wiley (2003) contends that school leaders require effective and fast communication and accessible information to manage their schools well and this can be possible through the use of ICT. Consequently, Pelgrum and Law (2013) indicated that the integration of ICT into school management is costly and at times a complex process as it needs a lot ICT facilities, qualified staff and other things, yet, in view of the benefits are numerous, it must be adopted. To repeat the point, although then use of ICT in the administration and management of schools expensive, it brings numerous benefits to the schools, students and other stakeholders in education. Yu and Darrington (2006) contends that school leaders integrate ICT in school administration and that the leaders should play important role in this realization. This idea is supported by Yu and Prince (2016) when they submitted that school administrators have important roles to play in successful integration of technology in schools. As leaders of schools, their direct and indirect role in initiating the need to integrate ICT in schools, procuring the necessary tools and ensuring implementation of the plan greatly rest on the shoulders of the school

leader. This implies that school heads who put in much energy, efforts and enthusiasm are likely to get their goal of ICT integration in school management achieved as opposed to those who do not inject such amounts of energy, strength and effort in that respect.

The benefits of ICT in school management are unending as Thomas (2007) posits that computers offer great speed and accuracy in performing the various administrative tasks as well as storing large volumes on information on computers. Alex (2013) adds that, the introduction of ICT has made possible for management to monitor and manage school activities electronically. With the click of a button, school heads are able to monitor daily activities in the school. Without ICT, school leaders would have monitored these school activities by entering the details manually in schools. It is essential for people to comprehend the evolution of technology prior to developing the wherewithal for record keeping solution. It has been observed that ICT facilities are used effectively to manage records of the institutions. They use ICT in recording, storing and retrieving records of staff is worthwhile (Toyo, 2017). In support of this, Sheahan (2015) cited by Toyo (2017) postulated that ICT benefits institutions' offices by permitting them to work efficiently and to optimize productivity. ICT therefore provides a lot of advantages in records management in offices. Osakwe (2012) cited by Toyo (2017) also postulated that ICT offers chances to support records management in offices and that this practice is growing fast. In view of that, offices have a wide range of ICT tools at their disposal that they use to create and manage records.

According to Temu (2018), ICTs have the potential to make significant contribution to teaching, learning, and administration in the educational system. Oyier et al (2015) contends that ICT offers management the chance to manage their schools well. It is

used for information management to enable administrative, financial and instructional tasks in school. It also enables data about school policies and measures to be accessed easily for implementation of school programmes. ICT helps to make critical and dynamic changes in educational institutions. It offers heads and other administrative staff with the chances to adapt and manage school and staff needs. In all, ICT contributes greatly to improve effective functioning of schools (Onyekachi & Mohammed, 2021). This may account for Roberts and Sikes' (2011) contention that in the 21st Century, ICT has brought new perspective in education which is immensely contributing to effective and efficient management of schools worldwide.

According to Bert (2003), cited in Mainai (2016), ICT can be used in the following management areas: General administration, library system, payroll and finance, student data management, inventory management and student personal record keeping. Malci (2012) also holds the view that ICT helps in supporting powerful, efficient pedagogical administrative processes in the education sector. ICT skills are needed in all school management thus including administration of schools and management of school resources.

2.6 Head teachers' management responsibilities

Glossary of Education (2012) refers to school administration as the performance of the role of planning, organizing, directing and controlling human within schools while Okereke (2008) contends that school administration entails managing, administering, discipline, assessment, examinations etc. School administration is also referred to as the process of implementing principles methods and practices in school with the view to development to achieve its goals (Hoy & Miskel, 2004). Amadi (2008) contends that educational administration is the process in which human and material resources are brought together for effective and functional teaching and learning. It is said that ICT

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can help school heads to effectively and efficiently perform these complex tasks. So, school leaders require effective and fast communication and accessible information to manage their schools well and this can be possible through the use of ICT (Wiley, 2003).

Acero (2000) indicates that school heads offer the following functions in school. Provision of school supplies including textbooks and other teaching learning materials, assisting curriculum instruction and the organization of an instruction programme, keeping school records, accounts reminding stakeholders of the aims and needs of the school, budgeting for school requirements, planning for new buildings. The head teacher of a basic school is the senior most teacher who has been accorded the chance to superintend over the operations of the school. Head teachers are in administrative position because apart from their activity in the school as a teacher, they have some other assigned administrative responsibilities (Ghavifekr, 2013). The head teacher has been given specific responsibilities to perform to ensure smooth operation of the school. According to Schiller (2003), school leaders have a major role in the initiation and implementation of school change via the use of ICT. The school leaders also have role to play in facilitating complex decision to integrate ICT into teaching, learning and school administration. According to Apsorn, Sisan, Tungkunanan (2019), school leaders are institutional leaders who play vital role in ICT in schools. This accounts for why head teachers need to possess the competence in using ICT. They ought to have the capacity to use ICT to promote the culture of exploring innovative techniques in instruction, learning and management (Schiller, 2003).

Hennessy, Harrison and Wamakote, (2010) assert that school heads have the responsibility of managing students' enrolment, teachers' records, financial

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management, and other educational resources. In Ghana, the Head teachers' Handbook of 1994 and the revised version of 2010 clearly spelt out the head teacher's responsibilities. The foregoing connotes that heads of schools play significant role in school administration relative to setting goals, taking decisions, building relationships and establishing effective management structures (Owen & Valesky, 2011). These responsibilities can be performed manually, electronically (using ICT) or both by a head teacher. ICT can assist school leaders in streaming operations, monitoring students' performance and improving the use of physical and human resources (Kipsoi, Chan'gach & Sang, 2012).

One of the functions of the head teacher is the keeping of records of staff, students and school. The records are kept by the head teacher for current and future use. Managing students' records, especially has great implications on school governance (Otu, Bempah & Amoakohene, 2014). Records are an extension of human memory, intentionally designed to store information, document transactions, convey thoughts, support claims, advance explanations, give reasons, and provide enduring proof of events (Cox, 2011). As a result, information and communication technology (ICT) plays a crucial role in the collection, processing, and storage of educational data for current and future use. Information on students and teachers may be captured and kept electronically, reducing the problems that come with physical paper labour in schools. The use of ICT facilitates effectiveness of school administrative services and reinforces communication channels within the school community (Makewa, Meremo, Role & Role, 2013).

The use of ICT helps in the management of schools. Using ICT in administrative management entails utilizing technology for better planning, defining standards, implementing change, and monitoring core function results (Meryo & Boit, 2012). It is

through the use of ICT that administrators can perform their responsibilities accurately, timely, sufficiently and effectively. The efficient use of ICT helps in storage, preservation and presentation of large volumes of information to help administrative practices (Asiabaka, 2010). There are ICT facilities that have resulted in significant changes in the management of schools. Email is one of these tools; inside a school, email communication may be used for administration, exchange of instructional materials, or informal discussion. The prevalence of these usage is supported by research from throughout the world (Bebell & O'Dwyer, 2015). Communication of the school to partners outside the school via emails are rather monumental. Emails have revolutionized communication between administrators and staff in today's institutions. In the subject of school management, information and communication technology is also utilized to create databases for students and staff personnel. Students' databases mostly contain information about their gender, age, discipline histories, and academic achievement, whereas staff databases primarily contain information about individual instructors' recruitment dates, compensation scales, and attendance records, to name a few. These databases will always provide a cheaper mode of communication through online file transfers from one user to another in a networked setting (Bebell & O'Dwyer, 2014).

ICT adoption has become an integral part of school life and administration. Ngugi (2012) argues that ICTs have proven helpful for storing and evaluating data in school management, such as budgetary allocations, expenditures, student fee payment, and general accounting. Furthermore, according to Roberts and Sikes (2011), the budgeting process in schools, as a component of financial planning and control, need the availability of many sources of information to cope, which is best facilitated by incorporating ICT into school management systems. Budgetary allocations, as part of

the budgeting process in school administration, are complex procedures that need accurate, timely, and user-friendly data to support management choices. Ngugi (2012) argues that ICTs have proven helpful for storing and evaluating data in school management, such as budgetary allocations, expenditures, student fee payment, and general accounting.

IITE Policy Brief cited in Oyeniran and Onikosi-Alliyu (2016) contends that ICTs are now essential to support activities of educational institutions as well as their full academic life cycles. The Policy Brief stipulates that ICT is expected to help in financial management, recording and storing of students' records, inventory management, personal management of staff, library systems and learning management system. Similarly, Mutisya (2017) indicates that ICT plays very essential roles in data gathering in educational systems. It also helps to make data available to school staff, students, parents and other stakeholders. Wagithunu, Muthee and Thinguri (2014) add that ICT is crucial in enhancing school information management systems by allowing parents, students, and government authorities to access data. Nyamboga and Merem (2011) contend that using ICT greatly simplifies school information management systems. The high labour which takes man hours and a lot of energy in using manual system to manage school information is greatly reduced with the use of ICT. The easiness with receiving, storing and retrieving is far better than using manual means. With good knowledge on the use of ICT, managing school information is easy and comforting.

According to Albugami (2016), ICT is a useful tool for managing academic documents since it allows head teachers to control and maintain databases, spreadsheets, and presentations. Furthermore, ICT provides the most diverse and reliable data source to aid academics in their data collection and analysis. In these ways, incorporating ICT

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into the educational process promises to significantly improve educational outcomes for both students and teachers, who may use ICT tools to diversify and enrich their teaching materials, methods, and techniques (Omona & Weide, 2010). ICT is said to have contributed greatly to simplifying school management duties, which include coordination of teaching and learning processes, as well as educational programs; financial, human resources, and supporting resources; library and information science, and general administration (Mingaine, 2013). ICT is then seen as very useful for performing all aspects of the school administration and management. That may account for Abdul and Zohora (2012) postulation that ICT plays critical role in making school administration less difficult; as the use of technology helps to effectively manage information about students, manage records of teachers, manage finances of the school as well as other activities that occur in the school. In support of this point, Oluoch (2016) contends that ICT is very essential for keeping staff records, students' records school policies and history, school academic performance and keep records on school facilities and equipment. Wango (2009) adds that the use of computers assists school management in undertaking their functions as it makes it easy to store and access data, saves leaders' time and money spent on managing information, easy to store large volumes of data as well as communicating information to appropriate people.

In adding their voice to the role of ICT in school administration, Katitia, Tanni, & Oruta (2019) indicated that ICT is a solution to the problems encountered in managing schools through traditional means. To them, ICT aids to keep adequate and accurate data of students, school staff (both academic and non-academic) and school records to ensure effectiveness. Considering the numerous areas of school administration and management that ICT can be used to perform, stakeholders of education ought to increase their effort to equip school leaders with ICT competence. This idea finds

expression in the postulation of Teklemarian (2009) that many of the activities and processes that happen at the head's office depend on computers. There should therefore be an increased need for the use of ICT in all administrative and management of school as requested by Muchuri (2014). More support needs to be given to schools to enable them use ICT in the administration and management of schools to take advantage of the benefits of ICT. This can only become possible if the right kinds of ICT resources are available with internet connectivity.

2.7 Factors that drawback Head teachers' use of ICT in school administration

The use of ICT in the administration and management of school is not without challenges. Like many other resources that are used in administrative practices come with some bottlenecks so is the use of ICT in administration and management of schools. A study conducted by Opoku (2016) found that basic schools in Ghana have a lot of difficulties in obtaining good ICT tools for use in schools. Due to financial and other difficulties, schools are unable to procure and use adequate and well functional ICT tools. Natia and Alhassan (2015) also discovered that staff's access to and usage of computers in the school is insufficient to make substantial progress toward achieving all of the aims of education.

Access to ICT infrastructure and programmes is widely acknowledged as supporting and promoting teaching and learning (Tondeur, Valcke & van Braak, 2008). Hence, head teachers are encouraged to use ICT services such as computer-assisted education to help pupils learn more effectively (Bhalla, 2013). This makes equipping schools with ICT infrastructure or resources is very essential and the way to go in ensuring that ICT is fully incorporated into the school system. In developing countries like Ghana, it is government which is expected to invest in ICT in the schools. However, governments have not been

able to invest heavily in ICT and that makes many schools have limited access to these forms of infrastructure.

Another challenge that has been associated with ICT usage in school is shortage of electricity. Many schools do experience challenge with electricity supply and erratic power supply which impacts not only on computer use, but also access to online resources. Dei (2018) therefore avers that one of the greatest hurdles to ICT use in Ghana's basic schools is a weak electricity network. Most towns and villages and for that matter their basic schools in the country are not hooked to the national grid which makes it difficult to use most ICT tools in the schools. Even schools that are privileged to have electricity power supply do experience erratic power supply amidst low currents which do not enhance and facilitate the use of ICT in the operations of basic schools. Associated with electricity problem is internet usage in school. Most schools do not get access to internet to enhance their use of ICT resources to manage their schools. Making a school's internet accessible and usable by teachers and administrators would improve the school's information flow.

ICT infrastructure is a problem. Even though the Ghanaian government recognizes the importance of ICT in education, Natia and Alhassan (2015) believe that the condition of ICT infrastructure and tools on the ground is not promising, since access is below standard and school demands are not met in comparison to other developing nations. Since accessibility and utilization of any resource is dependent on availability, the fundamental fact is that ICT has not been used effectively for managing public basic schools in Ghana. The fundamental fact is that ICT has not been used effectively for managing public basic schools in Ghana (Natia & Alhassan, 2015).

According to Buabeng-Andoh (2012), the proportion of computers used for administrative purposes in Ghana's primary schools is extremely low, slowing communication between schools and the outside world. It also has an impact on decision-making and the execution of educational activities in primary schools, contributing to the high prevalence of ICT illiteracy.

The capacity of head teachers to use ICT in management of schools is a huge challenge. As Natia and Alhassan (2015) discovered in some schools, in spite of schools having access to ICT resources such as computers, staff's capacity to use them was limited. It is a reality that some basic school administrators still have insufficient knowledge and skills in computer hardware and software applications (Buabeng-Andoh, 2015). Meanwhile to be able to utilize ICT in the administration and management of schools, basic school headteachers or administrators need to have a good understanding of ICT in areas including word processing, database, presentation software, desktop publishing, administration and management software, internet search, peripheral hardware, and e-mail (Selwood, 2015). ICT helps to keep school administration records easily, accurately and efficiently. It helps in retrieving and tracing documents and records easily. It is used to collect, process, store, analyze and dissemination information. ICT enhances the daily functions of school activities, programme, solving individual or groups as well as staff development (Mohammed, 2006). The use of ICT facilitates effective administration of services and reinforces communication channels with the school community (Makewa, et al, 2013).

From the foregoing challenges that bedevil the use of ICT in the management of schools, it can be said the challenges are many and Dei (2018) succinctly says that, the primary barriers to using ICT for school management include cost, technology, skills,

managerial and leadership issues, and environmental concerns. These are challenges that should engage the attention of stakeholders of education to enable schools have ICT incorporated into their activities. Stakeholders of education can assist schools in various ways to acquire necessary ICT resources to make school administration and management effective and efficient. All aspects of school administration require efficient ICT tools to in order to gather, process, record, store and send data to appropriate places. If ICT tools are used to perform some of these responsibilities leaving out others, the full advantage cannot be taken of the resources. Consequently, head teachers require the use of ICT in performing all administrative functions to be able to enjoy the goodies of the technological revolution going on in all sectors of the economy.

2.8 Empirical review

The empirical review covers the main phenomena in the objectives that guided the study such as Uses of ICT in administration of schools; knowledge and skills of head teachers in the use of ICT; benefits of use of ICT in administration of schools; challenges confronting use of ICT in administration of schools; and strategies adopted in the use of ICT in administration of schools.

A study was conducted by Chepkonga (2015) on principal's use of ICT in management of public secondary schools. The study aimed to assess the level of training of ICT received by heads of schools concerning ICT and the level of integration of ICT in management of basic schools. In the study, 75 principals of public secondary schools in Nairobi, Kenya were used as the population. Cross sectional survey design was adopted to guide the conduct of the study while questionnaire was developed to gather data from the respondents. The analysis of the data revealed low integration of ICT in

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the management of the schools. The study further revealed significant relationship between principals' educational level and ICT integration in management of schools.

A similar study was conducted by Oluoch (2016). The research sought to uncover the strategies used to enhance ICT use in delivery of management services in public secondary schools in Siaya Country in Kenya. The study used the positivist paradigm and mixed methods approach. The descriptive survey design was used in this study. Questionnaire, interviews and document analysis were used in data collection. The study discovered that much support is required from appropriate stakeholders in the integration of ICT in management of the schools. The author recommended that government ought to stride to post ICT teachers to schools to train the heads to acquire requisite skills in ICT for their administrative functions. This is a sure way to help schools to implement well the ICT usage in school management activities.

Dike, Loretta, and Okeke (2019) examined the relationship between the technology leadership competencies and integration of ICT in school. The study used 254 head teachers of basic schools in Rivers State, Nigeria. Head teachers' Technology Leadership Competencies Questionnaire was used for the data gathering. The researchers used Pearson Product Moment Correlation Coefficient to analyse the data gathered. Their study revealed that head teachers' articulated vision statements and staff development competencies. On the contrary, head teachers' competencies and infrastructure had no significant relationship with ICT integration. Conclusions drawn on the study is that, for effective ICT integration in primary schools, technology leadership competencies are required. It was recommended clear vision statements about ICT integration should be made by the government, organizing seminars to train head teachers on Technology Leadership competencies. Government should make

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funds available for head teachers to maintain ICT facilities and sustain integration in model primary schools.

Abdul and Zohara (2012) carried out a study to uncover the use of ICT in the management of schools in Malaysia. They adopted quantitative approach. Teachers, headteachers and supervisors constituted the study population. Structured instrument was used as a data collection tool. The research revealed that most of the schools did not have ICT policy at the school level although ICT facilities were in the schools. Again, it was discovered that the school leaders did not integrate their ICT skills and expertise in school administration. In view of the numerous challenges that schools encounter in utilizing ICT in activities, Day and Leithwood (2007) urge school leaders to have positive attitude and perceptions, plan and implement ICT in their daily administration activities in spite of the challenges they may face. They indicated that ICT age is the "golden age" of school leadership change. Is critical in the success of school administration in the contemporary times.

A study carried out by Snellen (2012) cited in Gedwar (2016) investigated the use of ICT in schools in Thailand. The descriptive survey study used 191 school leaders and 1991 ICT staff. Thus, the population of the study was made up of school leaders and ICT teachers. Survey questionnaire was developed and used to gather data from the respondents. It came out of the study that ICT usage in management functions was low. Most of the respondents were not using ICT tools to carry out administrative duties. Toyo (2017) also surveyed the application of information and communication technology to the management of records in the Office of the Head of Service, Asaba, Delta State, Nigeria. Questionnaire designed to generate data from respondents, with sample size 45 for the study. Descriptive was employed with the use of frequency and percentages. Findings revealed that, records kept in government offices include general correspondences, vital statistics, working

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papers, staff records, finance records and legal hold records, that ICT facilities used for records management in offices include CD-ROMs, USB Flash Drives, Computerized Database, Computers, Mobile phones, Memory cards as well as external hard disk drives, that the extent to which ICT facilities are applied in the management of records in government offices include in the creation of records, to process records and documents, in storage of high volume records, retention/disposal, retrieval of records and documents. These benefits have greatly changed the way and manner in which records are managed in government offices.

Another study was conducted by Chukwu (2020) to assess the headteachers' perception on ICT in management of education. The purpose of this study was to examine the utilization of information and communications technology (ICT) in the management of primary education. The positivist paradigm was adopted with the use of quantitative approach. The descriptive survey research design was used. A population of 1195 head teachers of primary schools constituted the study population while 318 respondents were chosen to form the study sample to provide data for analysis. Findings of the study revealed that ICT was utilized to a little extent in record keeping in the primary schools in Enugu State as well as teaching and learning to ensuring security in primary schools in Enugu state. In view of the low usage of ICT in the management of the schools, a recommendation was made to appropriate authorities to help improve the situation.

Mugo (2014) carried out a study to examine the factors that impact on data management using Management Information Systems by education administrators in public schools in Thika West district, Kiambu County. According to the study's findings, 61% of institutions never utilize computer software to manage data, while 44% always use manual methods. Only six percent say calculators are never used to handle data, while 29 percent say they are usually utilized. Computers are rarely utilized in data management, with just 20% of respondents indicating that computers were used. This

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indicates a lack of computer knowledge and limited computer use in data management. According to the data, 75 percent of District Education officers, 66.66 percent of head teachers, and 52.7 percent of Heads of Departments utilized computers, compared to 50 percent, 22.2 percent, and 13.8 percent, respectively, who used computer software. Oyier, et al (2015) examined the effects of ICT integration in management of private secondary schools in Nairobi County. The study was conducted to ascertain the effects of ICT in management in private secondary schools. The study used the survey design. A sample size of 40 principals was used. The study revealed that, the use of ICT lead to improvement in instructional administration and financial management of the schools.

Kiplagat (2011) cited in Oyier et al (2015) found many challenges such as inadequate computers, lack of electricity and trained teachers are hampering school use of ICT in their management practices. Said (2015) studied head teachers' ICT literacy and readiness in using computers. It sought to ascertain head teachers' tertiary learning experiences and school management tasks. The research adopted exploratory design to guide the data gathering on headteachers' perceptions and readiness in the use of ICT in management of schools. The study revealed that, the headteachers had positive perception on the use of ICT in management of schools. It also revealed that, most of the headteachers were prepared to learn ICT in managing their schools.

Katitia, et al (2019) conducted a study on the role of school administration in the implementation of ICT in human resources administration in public secondary schools. The descriptive survey was used as a design while principals, teachers, students and directors of education formed the study population. Different data collection tools such as questionnaire, interview and observation were employed for the data gathering. It

emerged from the study that, the use of ICT in all the departments of the schools was low. Most of the public schools did not apply ICT in various areas of school administration. Only a few departments used ICT in their administrative practices. It was then suggested that the use of ICT in all aspects of school management should be intensified to improve their efficiency.

A study was conducted by Aldewahad (2016) to analyse ICT implementation in school. The quantitative study realised cross-sectional descriptive survey and used questionnaire as data collection tool. The study found that lack of knowledge and skills of the practitioners, financial constraint, low internet connectivity, lack of technical support, time, as well as poor ICT implementation served as factors that drew-back the effort to implement the policy. Another research conducted was conducted by Nyanchoka, Matula and Kalai (2017) on use of ICT in schools. The unveiled that, the principal's attitude had negative impact on the use of ICT in school administration. The results of the study also indicated that many of the leaders were reluctant to use ICT for their administrative functions. Similarly, Mureith and Zengele (2015) found that, some school leaders such as head of departments were resistant to change from manual and traditional way of performing their administrative to the electronic means of performing their roles in the schools. The negative attitude and their age made them resistant to change which slowed down the integration of ICT in school administration.

In the study carried out by Musambai, Ndirangu and Mukhwana (2017), lack of finance, lack of internet, technical support and inadequate personal computers in the schools served as challenges for the heads to use ICT in managing their schools. There were major factors that hindered the heads of schools' efforts to integrate ICT in the management of schools. The authors therefore suggested that the government and other

relevant stakeholders ought to provide financial support to the schools to be able to solve the problems identified so that the integration of ICT into the system could be possible. Financial mobilization is very critical in acquiring requisite ICT resources in the bid to integrate them in school administration and this cannot be achieved without the support of all stakeholders in education.

On how to solve the challenges, Seyal (2012) conducted a study which came out with the following: the need to offer professional development and training programmes for heads of schools and teachers to enable ICT integration for schools to achieve their set goals. The author added that school administrators ought to be trained to acquire competence in the use of ICT to gather and analyse data for administrative work. A study analysed ICT utilization among school leaders. They conducted that ICT play very essential roles in making school administration less cumbersome more effectively integrated to the official information flow about students, curricula, teachers' budgets and activities through the educational system information pipelines. ICT was found to be helpful to effective operation of schools as organisations and as a teaching and learning within the school community (Mabiki, 2017).

Again, Afzaal (2012) conducted a study on a preliminary study of school administrators' use of information and communication technologies. However, the study found the use of email to communicate with staff and colleagues is not quite promising, administrators indicated a need for professional development to use technology for research, web search, develop budgets, create databases and make presentations. The study further highlighted a need for training to evaluate hardware and software as enhanced skills in these areas are crucial for leaders to further facilitating technology's integration. The study adopted the positivist paradigm with quantitative approach and that of descriptive and of an exploratory nature. The target

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population for the study include the administrators of 122 primary schools' districts. The results shows that majority of the school administrators have some level of computer expertise and also possess sufficient computer literacy. A similar study was undertaken by Weathersbee (2008) which sought to investigate the level of technology integration of schools in Texas in America. Quantitative was use as well as descriptive survey design. Multiple regression analysis was conducted to examine the impact. It turned out that integration of technology had impact on students in science, reading and mathematics.

In addition, a recent study was conducted by Mainai (2016) on head teachers' preparedness for integration of information and communication technology in administration of primary schools in Narok north. The purpose of this study was to set to examine the head teachers ICT training levels, with four objectives. The study has it that, there were also fewer researches done regarding the topic hence a gap. The study adopted descriptive research design with a target population of 202 head teachers of the primary schools in Narok North Sub-County and 1212 primary school teachers. The study found that, head teachers' readiness for integration of information and communication technology was influenced by head ICT training levels, availability of ICT facilities, head teacher's computer usage as well as school head teachers' attitude towards ICT integration. Recommendations were made by government to provide enough funds to build laboratories as well as libraries. There was a positive reaction towards the utilization of computers in primary schools and levels of awareness in the usage of computer.

Another study was conducted by Njoka (2015) on the management challenges of using ICT in advancing administration at secondary schools in Kirinyaga county Kenya. A

mixed method was used in which applied qualitative and quantitative approaches with a target population of 18 principals and 54 teachers and two heads of departments. This study was to investigate the challenges in using ICT in secondary high school administration. Purposive sampling technique was used. A structured and semi-structured questionnaire, interviews were conducted in a face to face where questionnaires were administered to principals, heads of departments and ICT teachers respectively. Statistical Package for Social Sciences (SPSS) was used for data analysis.

Again, Oyier, et al (2015) conducted a study on effects of ICT integration in management of private secondary schools in Nairobi County, Kenya: policy options and practices. The study investigated into the effects of ICT in management in private secondary schools in Nairobi. The research adopting the survey design was adopted a target population of 140 schools (private) consisting of 40 principals sampled randomly. The study had it that, ICT is highly used in private Schools. Findings had it that, schools with larger enrollment used ICT having both day and boarding facilities. Hence, improves better in administrative, financial and in instructional management. Recommendations were made for consistent training of staff on new technologies to enhance school management, deliberate budgetary allocation in procuring hardware and software to support ICT in management and government policy to implement ICT in management at all tiers of the economy.

Furthermore, Selwood (2004) conducted a study on primary school teachers' use of ICT for administration and management. Reports on the findings indicates the baseline study *"ICT Test Bed Project"* in England as they relate to primary school teachers' use of ICT for administration and management, the presentation shows teachers attitudes regarding ICT and its use for administration and management. The study employed the

use of mixed method approach. To enable progress to be monitored, a baseline study of the 28 schools involved in the project including (5 secondary schools, 1 special school and 22 primary schools) was undertaken by a team from The University of Birmingham by Professor Hywel Thomas. The results point out to the fact that the level of use of ICT for administration and management was low Reasons indicates the lack of use relate to inadequate quality training and the availability of time and quality ICT resources.

Besides, Rahoo (2021) wrote on the impact of ICT skills for knowledge sharing among library professional of higher education institutions of Pakistan. Adopting the descriptive survey design, the study sought to examine the impact of ICT skills for knowledge. The study's population consisted of librarians who were workers in the institutions. Simple random sampling technique was used to collect data from the respondents. The study employed a quantitative method and analyze data using the SPSS and a descriptive statistic of frequencies and mean. Result obtained from the study revealed a total agreement by majority of the respondents on the effects of ICT, factors that accounts for use of ICT in knowledge sharing.

In addition, availability, accessibility and use of information and communication technology in management of students' academic affairs in Makerere was also written by Matovu (2015). It applied both correlation and cross-sectional survey design and employed the mixed method approach and collected data using semi-structured survey questionnaires and interviews. Correlations was employed to determine the extent to which ICT was related to management of students" academic affairs. Findings indicated that internet facilities, computers, management information systems, electronic databases were readily available and accessible to administrators, lecturers and students

despite the fact that, there were restricted to access for viewing results, record keeping, setting and marking examinations.

Conclusion were made that ICT facilities such as computers Management Information System the internet was mostly used for examination management mainly applied for processing examination results, checking' students' academic progress, grading students academically and for communication between lecturers, heads of department, communication to students via emails. calculating GPA for students and processing transcripts.

Mutisya (2017) studied the extent of ICT integration in the management of public secondary schools in Kitui County. The study was set out to determine the extent to which the public secondary schools have integrated ICT in the management of the schools. 58 secondary schools were involved in the study where 58 principals, 58 senior teachers and 266 assistant teachers were selected. Questionnaire was the only instrument used for the data gathering. The study disclosed that the respondents used ICT in school management frequently. The headteachers used ICT in communicating with teachers, parents and suppliers.

A study carried out by Etudor-Eyo, Ante and Emah (2011) on the use of ICT and communication effectiveness among secondary school administrators. Questionnaire was developed and used and used to gather for secondary school administrators. The sample size was 348 was made up of principals and vice principals. The study unveiled that, the extent of administrators uses and their effectiveness in communication was high. The use of ICT also predicted the administrator's efficiency in communication. This is line with the idea that ICT has the capacity to increase school efficiency and minimize unnecessary bureaucracy in school administration (Oboegbulem & Ogwu, 2013).

A study was conducted to ascertain the influence of principal's exposure to training in ICT-on-ICT integration. The study found that the majority of the principals did not use any form of ICT in schools. Majority of them indicated that, they had not been taken through any kind of ICT training (Abuga, 2014). Goyal, et al (2010) examined the factors which influenced effective use of ICT in management of schools. The issue was sought from the perspectives of teachers and students. The survey was carried out in schools in the city of Navi, Mumbai. They found the following as major factors that hampered ICT usage in school administration: institutional factors pedagogical factors teachers' factors and technological factors. The respondents showed dissatisfaction with the way ICT was carried in the schools. The stakeholders were not enthused about the level of utilization of ICT in the schools. They therefore called for an increased use of ICT in the activities of the schools.

Oyeniran and Onikosi-Alliyu (2016) studied ICT integration into school administration in secondary schools in Ekiti state. The study set out to uncover ICT integration in school management of public secondary schools. 62 school administrators were purposefully sampled for the study. Questionnaire were purposively used to collect data from the respondents. The study found that due to lack of training in the use of computers and other ICT resources, there was low use of computers in performing school administrative functions. There was inadequate provision of ICT resources to the school administrators. The administrators were unsatisfied with the level of integration of ICT in their administrative jobs. The study urged government to ensure adequate supply of ICT resources to schools to enable administrators to use them for effective school management. The suggested that administrators ought to participate in more ICT training programmes to improve their competence in the use of ICT in their administrative jobs.

Makewa, et al (2013) undertook a study on ICT in secondary school administration in rural southern Kenya. The study sought to assess the extent to which ICT was used by school administrators and how relevant it was to them. Principals, vice principals and HODs constitute the study population. The study finding demonstrated that, there was a significant difference between the perception of teachers and administrators on the relevance of ICT utilization in areas such as student administration general administration and supervision of instruction. How both teachers and administrators reckoned the use of ICT in secondary school administration as important.

Oyedemi (2015) examined ICT effective school management from administrators' perspectives. The researcher sampled administrators provide data on the use of ICT for effective school management the selected schools. Quantitative approach was adopted and followed the survey design in order to gather data from large group of respondents. To achieve the objective of the study, 120 administrative staff were recruited to participate in the study. The data was gathered via the use of questionnaire. The study revealed that, the administrators had a positive view on the use of ICT to ensure effective school management. The respondents added that the use of ICT would help in effective planning as well as communicating in schools.

Another was undertaken to measure the effects of computers in management of secondary schools the West Pokot County, Kenya. The study aimed at uncovering the use of computers in management o schools in Kenya. Survey design was used to guide the conduct of the study. The study found that most principals enhanced teachers training and development in ICT, mobilized resources essential for computers and also encouraged teachers to embrace computers. Staff were also rewarded especially those who were determine to use computers. The study recommended that government should

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ensure accessibility to ICT in schools to aid school managers' administrative of the schools (Merirengs, 2013). Similarly, Qureshi and Abro (2016) assessed the efficient use of ICT in school administration. The study found that, ICT was not effectively used in school administration. This was as a result inadequate appropriate resources, lack of monitoring mechanism.

Obuoda, Dawo and Sika (2020) examined the relationship between ICT usage for internal communication and principals' administrative public secondary schools in Homabey County. The study sought to establish link between ICT usage and principals' administrative qualities, correlational design was used. The study found a strong positive correlation between ICT usage in internal communication and principals' administrative quality. They commonly used of ICT for internal communication was mobile phone and concluded that the use of ICT in management of education is very important. They suggested that because ICT is good in enhancing educational administration, heads of schools reduce the use of manual system and rather use ICT the more for their administrative practices.

On their part, Onyekachi and Mohammed (2021) studied that deployment of ICT for school administration in public secondary schools in North-central Geo-political zone. It was revealed that, ICT aided in effective administration of the secondary schools. However, inadequate funding, inadequate ICT facilities poor computer literacy and inadequate ICT personnel. Ajayi (2009) also found in a research that, irregular power supply, lack of personal computer system, inadequate ICT manpower, lack of fund, inadequate facilities, fear of exposing too much information of the school to the public were the challenges confronting schools' adoption of ICT in their administrative work. Again, Kituyi and Adagun, (2007) conducted a study in Inter Pokot County on ICT in

school management. The study revealed that there was not effective and rapid access to ICT which made it uneasy for the schools to integrate ICT in their administrative practices. Hence the schools used manual means to produce information, send report cards and statistical returns to the relevance agencies and offices they deal with. The processes were found to be slow and prone to errors. Further Joel et al (2019) found that in most Nigeria schools, manual students' registration, maintaining student records, performance, inventory and stock keeping, suppliers list, doing cost accounting, paying bills, printing reports and drawing architectural designs were done manually. According to them, if the schools would use ICT in performing these tasks, they would save a lot of hours to enable them perform other tasks to enhance their management processes.

A study conducted by Memoh and Egbunu (2019) discovered that, factors affect staff use of ICT in administration. The authors carried out a study to analyze the use of ICT in Public Senior High Schools in Rivers State. Both Principals and teachers provided data for the study. Low rate of ICT usage ICT in senior high schools. Again, the study observed that the schools lacked adequate ICT facilities. The low usage of ICT in the management of the basic schools may be attributable to the inadequate ICT facilities available in the schools. Some of the school leaders may have been willing and desired to use the resources to perform their duties yet they could not lay their hands on the tools to do that.

Owen and Valensky (2011) outline the following: as the jobs of school head: management of staff and student personnel, school-community liaison, instructional and curriculum development, finance and business plant management. In order to efficiently perform these functions, school heads ought to have ICT skills and knowledge. ICT includes tools used for gathering, storage, retrieval, use, manipulation,

processing and transferring information with the aim of enriching the knowledge, developing communication, decision making and problem-solving ability of the user (Muniko, 2005). A study was conducted by Gedwar (2016) to survey the use of ICT for Administration and Management. The study investigated the importance of ICT to staff. It came out that, staff regard ICT as a good elixir to progress. However, male and female staff see the importance differently. Njoka (2015) the management challenges of using ICT for administration of secondary schools in Kiringa County, Kenya. Doctorate thesis conducted a mixed method study to unravel challenges that schools have in using ICT in school administration. Principals and teachers formed the study population. Multiple data collection tools were employed to gather data from the respondents. It came up that inadequate training of heads, lack of ICT policy among others.

McGarr and Kearney (2012) investigated the role of principals in promoting ICT use in small primary schools in Ireland. The population constituted principals and teachers. With a qualitative approach, interviews a focus group discussion were carried out with principals of the primary schools. Interview guide containing some questions was used as the data collection instrument while thematic analysis was conducted for the data analysis. The results of the interview had it that, most of the principals of the primary schools in Ireland did not use ICT tools for administrative practices. This situation was attributed to lack of time, poor level of technical support and resources. The lack of familiarities with the ICT tools was also a problem for the use of ICT for administrative practices.

Furthermore, Ngugi (2012) set out to analyse the use of ICT in education management in public secondary schools in Naivasha district, Kenya. The quantitative method was employed and a population consisting of principals for the study in public secondary schools with the use of questionnaires and interview Questionnaires were used to

collect the data from the principals while interview schedules were used to collect the data from both secretaries and Bursars. Out of which 37, 20 principals were sampled for the study. 60 respondents were sampled for the study (constituting 20 principals, 20 secretaries and 20 bursars). Drawn from each category, the study employed a Purposive sampling and stratifying the schools into National, Provincial and District schools. Analysis of data was done using SPSS. Testing reliability and validity the instruments were piloted in two schools which were not part main. Data was described using frequencies and percentages.

Abdul and Zohara (2012) carried out a study to uncover the use of ICT in the management of schools in Malaysia. The researchers adopted quantitative approach to guide the conduct of the study. Teachers, headteachers and supervisors constructed the study population. Structured instrument was used as a data collection tool. It emerged among others that most of the schools did not have ICT policy at the school level although ICT facilities were in the schools. Again, it was discovered that the school leaders did not integrate their ICT skills and expertise in school administration.

Day and Leithwood (2007) urge school leaders to have positive attitude and perceptions, plan and implement ICT in their daily administration activities in spite of the challenges they may face. They indicated that ICT age is the "golden age" of school leadership change. Is critical in the success of school administration in the contemporary times.

A study by Snellen (2012) cited in Gedwar (2016) was undertaken to assess use of ICT in Thailand. In all 191 school leaders and 191 ICT staff took part in the study. ICT was found to be used by the respondents. ICT tools were used to carry out administrative duties. Thankgod and Vulasi (2020) also found the following as the strategies that can be used to improve ICT usage in senior high schools: creating conducive environment,

training of teachers and administrators on the use of ICT, improve power supply, adequate finding among others.

Egboka (2012) also contended that provision of access to digital technologies and internet, and training of stays on new digital tools can help improve integration of use of ICT in to schools' administration. Pelgrum and Law (2003) indicated that the integration of ICT into school management is costly and at times a complex process as it needs a lot of ICT facilities, qualified staff and other things. Notwithstanding, the benefits are numerous. It brings benefits to the schools, students and other stakeholders in education.

Accro (2000) indicates that school heads offer the following functions in school. Provision of school supplies including textbooks and other teaching learning materials, assisting curriculum instruction and the organization of an instruction programme, keeping school records, accounts reminding stakeholders of the aims and needs of the school, budgeting for school requirements, planning for new buildings. Owen and Valensky (2011) outline the following: as the jobs of school head: management of staff and student personnel, school-community liaison, instructional and curriculum development, finance and business plant management. In order to efficiently perform these functions, school heads ought to have ICT skills and knowledge.

A study conducted by Peter (2012) adopted a quantitative paradigm to examine the extent of use of ICT in the management of public secondary schools in a district in Kenya. Cross-sectional survey method was used with the employment of questionnaire as a data collection tool. The structured instrument was pre-tested before it was to gather data from the principals of the public secondary schools in the area. The data was analysed using descriptive and inferential statistical analytical tools. The resulted

demonstrated that due to some factors, the administrators did not use ICT very much in managing the schools. In a similar study conducted by Okoyo (2013) to assess how prepared principals of public primary schools in the Bondo district, the result was not quite different. This study also used questionnaire as a data collection instrument and the data was analysed using descriptive statistics. It turn out most of the principals were not prepared to use ICT in the management of their schools due to inadequate competence in ICT and that only a few of them used it.

Mumbua (2009) found in a study conducted in the Makuemi district that, all schools' heads accepted that ICT was very essential in performing their administrative duties. However, the heads of schools did not fully use ICT in the performance of their administrative tasks in the schools. Muriko (2015) investigated factors affecting the use of ICT in school administration. The study used 22 secondary schools. Stratified random sampling technique was used to select the schools and their leaders, their assistants and heads of departments. Purposive sampling technique was used to select the respondents. Questionnaire was the only instrument that was used to gather data for the respondents. It came out of the study that schools did not highly use ICT for administrative functions. The factors that hinder the usage of ICT in the schools are lack of training for the heads, inadequate finance and ICT facilities and lack of ICT policy. The study suggested that training should be given to school's head and formulation of ICT policy.

Mang'ando (2015) undertook a study to uncover the role that ICT plays in secondary school administration. The study used 120 respondents from 100 public secondary schools. Both questionnaires and interview guide were used to gather data from the respondents because it was a mixed method research. The study revealed that,

computers were available and used for teaching and administrative purposes. However, the application of ICT in teaching and education was insufficient. Factors that accounted for this situation are inadequate ICT facilities, low government commitment and inadequate competence of teachers and administrators. It therefore called on the government to increase investment in ICT for schools and training for staff.

Mumbua (2009) found in a study conducted in the Makuemi district that, all schools' heads accepted that ICT was very essential in performing their administrative duties. However, the heads of schools did not fully use ICT in the performance of their administrative tasks in the schools. Dewir (2006) also found school leaders having it a challenge to integrating technology for effective school administration. Consistent with the findings of the other studies, Omgui (2013) found in a study a number of challenges such as inadequate ICT resources, inadequate competence in the of ICT and high cost of maintenance of ICT resource which did not permit most of the schools to use ICT in performing their administrative functions. Njoka's (2015) study results are also in line with the fact that most schools have challenges that thwart their desire and efforts to integrate ICT in the management of schools especially those at the pre-tertiary level of education. In addition to the inadequate ICT resources, lack of knowledge of teachers in the use of ICT tools to help school management to perform their administrative duties was also a challenge to the school. This situation made the school heads had to perform all duties that related to the use of ICT. In an apparent solution to this problem, Rodriques cited by Biegon (2017) recommend that teachers also need to be involved in the implementation of ICT in school administration as they are also important actors in the education sector. Skill challenge in the use of ICT in administrative practices seems to be a universal phenomenon as Mingaine (2013) discovered that most heads of public secondary schools experienced a similar situation.

Muriko (2015) investigated factors affecting the use of ICT in school administration. The study used 22 secondary schools. Stratified random sampling technique was used to select the schools and their leaders, their assistants and heads of departments. Purposive sampling technique was used to select the respondents. Questionnaire was the only instrument that was used together data for the respondents. It came out of the study that schools did not highly use ICT from administrative functions. The factors that hinder the usage of ICT in the schools are lack of training for the heads, inadequate finance and ICT facilities and lack of ICT policy. The study suggested that training should be given to school's head and formulation of ICT policy. To improve the use of ICT in school, the government of Ghana came out with a policy known as information and communication technology for accelerated development (ICT4AD). The policy focused on the development and implementation of ICT in education by training, research and generation of resources for expansion of ICTs. It intended to improve human technical expertise and the training of facilitators and experts in the application of ICTs in education.

Selwood (2004) found that school heads used ICT application to prepare timetable, teaching plan, scheme of work and school reports. Kazi (2012) asserts that ICT applications are helpful in recounting school financial documents such as the balance sheet, pays lip, audit reports, and stocks keeping as well as student evaluation reports and overall student records for future references. Sipila (2010) suggests that for schools to be able integrate ICT in education, there should be continuous training for school leaders, provision of ICT infrastructure, equipment and support. It is when there are done that the use of ICT application in education system can be a success. Afzaal (2012) found that Heads use ICT tools for decision making, data saving and online requests of clients and users. Singh et al (2012) contend that school administrators use different

kinds of ICT resources to keep interactions and connections, operate financial works, source records, process files documents and collect data. Qureshi and Abro (2016) that schools are expected to serve as basis of knowledge generation as learning place where ICT has become work effective factors that help not only in teaching and learning process but also in administration process. ICT serves as means to help administrators to perform their tasks.

Apsorn, Sisan and Tungkunanam (2019) studied factors that affect administrators use of ICT. Heads they were given the chance to upgrade their knowledge on ICT. Similarly, Chua and Kannan (2017) found that school leaders need to formulate policies and design professional-enhancing programmes that would help develop skills for effectively using technology among school administrators. It can be gathered from the foregoing that numerous have been found to serve as drawback to the use of ICT in the administration and management of schools.

Ukpoma (2019) reviewed literature on the meaning of ICT, types of applications and their uses for effective activities in schools. The exercise revealed that administrators had the tendency to improve and use ICT in their daily operations to make their duties effective and efficient. The paper suggested that school leaders ought to build their capacity to use ICT for their administrative functions. The recommendations are very ideal as it is only when the school leaders possess the competence in using the ICT tools that to gather, process, store and retrieve information for their administrative duties efficiently and effectively. Without the needed competence in ICT, they would not be able to use the resources, even if they are made available to the schools. The ICT resources will become white elephant in the schools and would only gather dust. These ideas may have accounted for Pelgrum and Law (2003) to assert that the integration of ICT in school management is costly and, at times, a complex process. The justify their

assertion by indicating that integration of ICT in school management requires many ICT resources, qualified personnel to utilize them and other accessories to fully achieve the desired goal.

2.9 Conceptual framework

A conceptual framework was developed to show the relationship between the variables of the study. It spells out the relationship between the independent variables and the dependent variables.
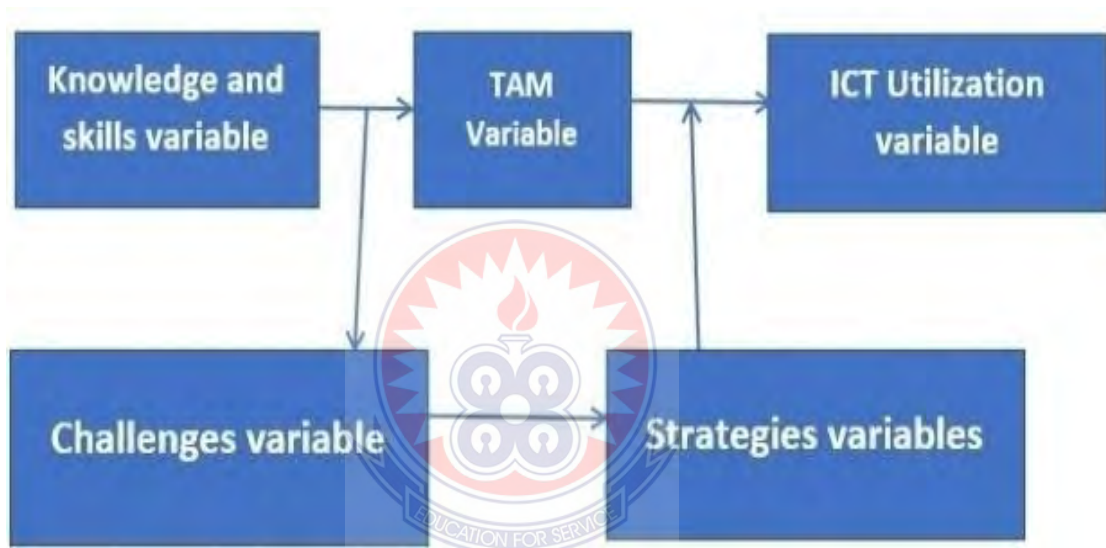
Fig. 3: Head teachers' use of ICT in school administration and management conceptual framework

For an administrator or managers to use ICT effectively in management of an organization they need to possess some level of knowledge and skills in technology. Again, the perceive ease of use (PEOU) and perceive usefulness (PU) of the technological acceptance module (TAM) may influence the use of the technology. The use of ICT comes with some challenges which can be influenced through the adaption of some strategies. If the strategies are effective to overcome the challenges it will lead to high utilization.

2.10 Summary of the chapter

The use of ICT in the administration and management of schools has attracted a lot of research interest from around the globe. This is probably because ICT plays vital roles in school administration and management. Educational institutions or schools make effort to acquire and use ICT in the management of schools. The advances in these efforts have been same and also unsatisfactory especially in schools in developing countries.

A lot of studies have been conducted to unravel the extent to which ICTs are used in school management. However, studies on the use of ICT in basic schools and particularly those in the northern part of Ghana had not been the intensive. There was therefore research gap in the study area.

CHAPTER THREE

METHODOLOGY

3.0 Introduction

The preceding chapter presented the literature review which provided gaps for this study to fill after disclosing the previous studies that have been done on the use of ICT in administration and management of educational institutions in Ghana and elsewhere. This chapter discusses the processes and procedures that were followed in carrying out research. This constitutes the research methodology (Kusi, 2012). This entails the research philosophy, approach and design that provided direction for the study. The chapter also includes information on the study population, sample and sampling procedure, research instrument, data collection and analysis as well as ethical consideration.

3.1 Research paradigms

It has been observed that generally, researchers have come up with different philosophies, which according to Creswell (2013), are said to be the belief and feelings about the world and how it should be studied. These beliefs do influence the way and manner that people carry out research although some rules and regulations guide the researchers' beliefs. Philosophies are defined as the basic set of beliefs that guide actions including research actions (Kuranchie, 2021). Taylor, Sinha and Ghoshal (2007) define research philosophy as the broad view or perspective of research. This implies that research philosophy is a set of beliefs, perspectives and practices that provide a summary of inquiry within a discipline which shows the processes through which an investigation can be undertaken. The purpose and objectives of a research therefore are influenced by these beliefs. These lead to the ideas of positivism,

(quantitative), interpretivism (qualitative) and pragmatism (mixed methods) approaches to research (Kuranchie, 2021, Creswell, 2014).

In view of the intent and purpose of the study, the positivist paradigm was followed. According to the Uddin and Hamiduzzan, cited in Kuranchie (2021), the positivist paradigm is an objective way of describing phenomena. Positivist is an epistemological position that advocates the application of the methods of the natural sciences to the study of social reality. The paradigm focuses knowledge generated or confirmed by the senses, hypothesis, and that is objective, factual and not subjective or leaning towards value judgment (Bryman & Bell, 2011) The positivist adheres to the view that only "factual" knowledge gained through observation (the senses), including measurement, is trustworthy (Collins, 2010). In positivist research approach, the role of the researcher is limited to data collection and interpretation in an objective way. Thus, the ontological and epistemological basis of the research is that the truth is arrived at using facts and figures. The positivists contend that objects have an independent existence and are not dependent on the emotions or predisposition of the investigator or knower. The philosophy aligns with the natural or pure sciences that heavily rely on experimentation, observation, correlation and calibrations (Cohen, Manion & Morrison, 2008).

The reasons for using positivism for the study include the fact that; the study on the use of ICT in administration and management of basic schools in the Sagnerigu Municipality involved the collection of quantitative data through highly structured questionnaire, the study involves the use of large sample, and the study items can be quantified (Saunder, Lewis & Thornhill, 2012).

The adoption of this paradigm enabled the researcher to measure the objectives: by statistically describing the use of ICT in the management of the basic schools, the

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challenges that the head teachers encountered in using ICT in managing the basic schools as well as the strategies that the head teachers could adopt to improve their use of ICT in the management of the basic schools in the municipality. Testing of hypotheses was also possible through the adoption of the positivist paradigm.

3.2 Research approach

The study is purely quantitative in nature. Quantitative research deals with questions of relationship, cause and effect or current status that researchers can answer by collecting and statistically analyzing numeric data (Ary, Jacob & Razaviel, 2010). According Kuranchie (2021), quantitative research, basically, is about numerical measurement of facts or data on specific constructs. Quantitative data was gathered from head teachers of basic schools in the Sagnerigu Municipality on their use of ICT in the administration and management of their schools. In the study emphasis was on numbers and not processes and meaning of ICT usage in the management of the basic schools.

The research approach adopted resonates with the research instrument (the questionnaire) that was designed and used for the data gathering. Really, the adoption of quantitative approach enabled the researcher to gather data from large group of people using a structured instrument. Questionnaire was used to gather data in the form of numbers or figures that could be easily transported for statistical analysis. This enabled both descriptive and inferential analytical techniques to be adopted to analyse the data to answer the four research questions and test the two hypotheses that guided the study. The approach enabled the researcher to sample a good number of head teachers for their utilization of ICT in the management of their basic schools in the municipality. It also helped in making generalization of the findings that were obtained from the study.

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3.3 Research design

Bryman and Bell (2011) describe research design as the overall plan for gathering data to answer specific questions. Research design is also described as the blueprint upon which research activities are anchored (Kuranchie, 2021). It is observed from the definitions that research design is a conceptual structure that one use for the gathering, measurement and analysis of data. Following from the research paradigm and approach adopted for the study, descriptive survey design was used to guide the conduct of the study. Babbie (2010) contends that descriptive survey seeks to provide measurement and report characteristics of a population or phenomena under study. Ary et al (2010) define descriptive survey as an inquiry into the status quo of the phenomena studied; it attempts to measure what exists concerning the variables and conditions in a situation. Descriptive survey is adopted for a study when a researcher is interested in describing some aspects of a population by selecting unbiased sample of people who complete a survey instrument (Kuranchie, 2021). In view of the fact that the study intended to describe the head teachers' use of ICT in the administration and management of basic schools in the municipality and also use questionnaire to gather data from randomly sampled respondents, descriptive survey design was deemed appropriate.

Essentially, the use of the descriptive survey design enabled the researcher to deal with head teachers of many schools, some of which are in rural, urban and semi-urban communities in the Sagnarigu Municipality. Again, as a descriptive survey design, head teachers were employed to provide data for the study. The data was generated using survey in the form of questionnaire.

Again, the survey design was appropriate for the study because it is less expensive way of gathering data from large number of respondents (115) who were involved in the

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study. Since the study included a large number of basic schools in the municipality, a survey design allowed the research to use quantitative method of data collection such as structured questionnaire that ensures easy collection of data from the respondents.

3.4 Site and sample characteristics

Creswell (2009) refers to study site as an immersive environment which can have various settings for a researcher to use. Site and setting for this study were deem essential as the researcher intended to investigate the head teachers of basic schools' usage of ICT in the administration and management of schools. The study was undertaken in the Sagnarigu Municipal District, which is one of the sixteen districts in Northern Region of Ghana. Originally, it was part of the then-larger Tamale Municipal District in 1988, which was created from the former West Dagomba District Council. The district was split off to create Sagnarigu District on 24 June 2012; thus, the remaining part has been retained as Tamale Metropolitan District (which it was elevated to metropolitan district assembly status in August 2004). However, on 15 March 2018, it was elevated to municipal district assembly status to become Sagnarigu Municipal District. The municipality is located in the northwest part of Northern Region and has Sagnarigu as its capital city (which is also the capital city of the Northern Region).

The study was conducted in the Sagnerigu Municipal, which was carved from Tamale and inaugurated at their various locations simultaneously on the 28th June, 2012 by Legislative Instrument (LI) 2066. The Sagnarigu Municipal is one of the 261 Metropolitan, Municipal and District Assemblies (MMDAs) in Ghana, and forms part of the 16 MMDAs in the Northern Region. The Municipality lies between latitudes 9º16' and 9º 34' North and longitudes 0º 36' and 0º 57' West with its Administrative capital Sagnarigu and covers a total land size of 454 km². The Municipality shares boundaries with the Savelugu Municipal to the north, Tamale Metropolis to the south

and east, Tolon District to the west and Kumbungu District to the north-west. The population of the Municipality according to the 2021 population and housing census stands at 341,711 with 170,199 males and 171,512 females.

3.5 Population

Kuranchie (2021) defines population as the target group that a researcher is interested in obtaining information from in order to draw conclusion while Ary et al (2010) contend that all members of a well-defined group of people, events or objects constitute a study population. A study population is the sum of people which are of significance to the researcher. On his part, Kusi (2012) construe research population to be a group of individuals or people with the same characteristics and in whom the investigator is interested. The target group that the researcher gathered data from, which are the head teachers of the basic schools in Sagnarigu municipality in the Northern region of Ghana. The total number of primary schools in the district is 208 and that of Junior High Schools is 119. Therefore, the total number of basic schools in the Sagnarigu municipality is 327 hence the population is 327 as each school has one head teacher (EMIS, 2019). In all, 245 head teachers qualified to take part in the study.

Sample and sampling techniques

A sample is a subset of a large population whose selection is based on the knowledge of the elements for a research purpose (Kusi, 2012). The purpose of selecting a sample is that it is not possible, in most cases, to select the entire population of a study, hence, part of the population which is representative enough is selected. Stratified and simple random sampling technique were used to sample basic schools and their head teachers. The schools were stratified into primary and junior high school (JHS). In contemporary times, the primary schools of the basic education have separate head teachers as well

as the junior high school segment. In this case, the schools were stratified into primary schools/head teachers and junior high schools. The primary school head teachers formed the Stratum 'A' while the junior high school head teachers constituted Stratum 'B'.

Since the research could not have used all the head teachers in both the primary category (104 head teachers) and JHS category (60 head teachers), simple random sampling technique was used to select a number of head teachers from both categories. Hence, in determining the sample size, the single proportion rate formula by De-Vaus (2002) was used to calculate the sample size. With a confidence level of 90% and a margin of error (a) of 10%, the formula for the sample size is as follows:

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

Where; n = *sample size*; N = *Sampling Frame;* 1 = *Constant; and* a = *Margin of error*
The formulae give a sample size of 118 which used for the study.

Since all primary schools and junior high schools have head teachers and in order to prevent bias, the researcher stratified the groups into 'A' and 'B', where 'A' represented the primary school head teachers and 'B' represented the junior high schools. After the researcher used simple random sampling technique to select the respondents from the respective groups. Specifically, the lottery method was applied in the selection of the respondents in the two groups. So, in group 'A', the names of the schools were written on pieces of papers and they were picked randomly till 53 papers were gotten. The same process was followed to pick names of 65 junior high schools. In all, the names of 118 basic school head teachers were picked to form the sample for the study.

3.6 Research instrument

Different research instruments are used to gather data to achieve objectives of a study. In response to the tenets of quantitative research, the data was gathered using a structured instrument. Questionnaire is an instrument which contains items that seek factual data about issues, conditions, events or practices which the respondents are presumed to have knowledge on (Singh, 2006). It is also regarded as a data collection instrument which contains collections of statements that elicit specific information to answer research question and/or test hypotheses (Kuranchie, 2021). Questionnaire was the instrument that was designed and used to generate data for the study.

The instrument was deemed an appropriate data collection instrument to gather data to answer the research questions and test the hypotheses (Seidu, 2012). The researcher used structured questionnaire to gather data from the respondents. McMillan and Schumacher (2011) recommend a questionnaire if the researcher knows that the respondents are in the position to answer the questions on the instrument. Questionnaire was the most suitable instrument for the study because it allowed the collection of data within a short period of time from several respondents.

The questionnaire was segmented into five sections or parts. The first part was used to gather data on the socio-demographic characteristics of the respondents, whilst the second part was used to generate data on the head teachers' ICT knowledge, the third part covered the level of utilization of ICT in administration of the basic schools. The fourth part dealt with the challenges that the head teachers encountered in the use of ICT in administration of basic schools and the fifth part covered the strategies that could be used in the deployment ICT of the administration of the basic schools.

3.7 Pilot testing

Prior to the conduct of the main study, a pilot test was carried out at the Savelugu municipality in the Northern region of Ghana. Pre-testing is undertaken to check the degree of understanding of the questions by respondents, to check the relevance of the questions and to ascertain the interest of the respondents in participating in the study (Panneerselvam, 2010). Pre-testing is also undertaken to establish reliability of research instrument (Kuranchie, 2021). Kumekpor (2002) also contends that pilot testing is useful in testing the suitability of a questionnaire or to test a group's attitude or reactions to an impending survey. Pilot testing of research instrument is done on respondents who share similar characteristics with the respondents of the main study. The Savelugu municipality is where the pilot testing was carried out and it shares similar characteristics with the Sagnarigu Municipality. The two areas are of a municipality status, have only basic and secondary schools, among others.

In the Savelugu municipality, 20 head teachers of basic schools were randomly selected to participate in the pilot testing. Of the 20 head teachers, 13 were head teachers of junior high schools, while 7 of them were head teachers of primary schools in the municipality. The head teachers were contacted through their Municipal Director of Education after submitting an introductory letter from the Department of Educational Administration and Management, University of Education, Winneba.

After establishing rapport with them and explaining the essence of the study, the questionnaires were administered. They filled and returned them to the researcher on the same day. The filled questionnaires were screened, coded and analyzed to check the reliability co-efficient, which was found to be high. The few concerns that the head teachers offered on some of the items on the questionnaire were addressed and

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incorporated some correction into the final instrument prior to administration to gather data for the main study.

3.8 Validity and reliability

Validity is the extent to which an instrument is able to measure what it is supposed to measure. It is conceptualized as the accuracy of credibility or a description, conclusion, explanation and interpretation of the data collection process (Cohen et al, 2008). It implies the extent to which data represents the reality of the situation that has been studied. The researcher ensured face and content validity. Content validity is the extent to which the content of a measuring instrument sufficiently represents all items of a study objectives. To ensure or improve the validity of the instrument, a draft of the instrument was given to two colleagues pursuing MPhil in Educational Administration and Management to scrutinize for their inputs. After that, the research supervisor and an expert in educational administration and management also examined and scrutinized the questionnaire for their inputs and comments. The reviewers gave their opinions on problems they saw about the items and whether the instrument was good enough to obtain the desired data. Those opinions were factored into the final instrument.

Regarding reliability, the instrument was pre-tested. The pre-testing was conducted on head teachers of twenty (20) basic schools that did not form part of the schools that were used for the main study. After administration of the questionnaires, Cronbach alpha co-efficient was calculated which yielded a reliability of r-0.892. The reliability co-efficient was high so the instrument was used to gather data for the main study.

3.9 Data collection procedure

Before the process of data collection, an introductory letter was obtained from the Head, Department of Educational Administration and Management, University of Education,

Winneba, to seek permission from the Municipal Director of Education, Sagnarigu. The director then informed the headteachers of the basic schools to permit the researcher to undertake the research in the schools. In the various selected schools, the researcher introduced herself to participants, disclosed to them why they were selected and the relevance of the research. The efforts helped to seek their permission and create a rapport for a fruitful exercise. The processes involved in the exercise and what were expected from them were thoroughly explained to them.

Due to the dispersed nature of the municipality, two trained assistants helped in the data collection. They were trained on data collection techniques, human relation and data handling prior to the administration of the instrument. The data collection lasted for one month. The questionnaire was administered to the respondents through personal contact by the researcher and the assistants. Although all the questionnaires administered were retrieved, a few of them were not properly filled so they were not unusable for the analysis. This resulted in a 98% return rate.
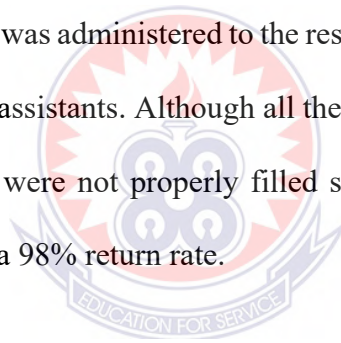
3.10 Ethical Issues

Strydom (2002) posits that ethics is a set of widely accepted moral principles that provide rules for and set behavioural expectations of a researcher's conduct. Bryman and Bell (2011) conceptualize ethical consideration as the ethic of respect for persons, respect for knowledge and respect for democratic values and quality of a research process. Bryman (2012) offers these main areas of ethics that researchers need to consider while conducting a study, which are harm to respondents, informed consent and privacy. In the conduct of the study, all efforts and attempts were made to observe high ethical standards acceptable in scientific inquiries.

The issues of privacy, voluntary participation, confidentiality, and anonymity were given a priority. In the first place, formal consent was sought from the Municipal Director of Education of the Sagnarigu Municipality and all the headteachers who served as respondents before the data gathering commenced. Voluntary participation was ensured so that only headteachers of the basic schools who were willing were made to take part in the research. They were left to decide on whether to participate in the research or not. In the process of the research, the participants reserved the right to opt out any time they wanted.

Also, the respondents were assured of confidentiality of the data they provided. They were made to know that the exercise was purely for academic purposes and were only to be used for research purpose. Besides, the respondents were assured of anonymity and explained to them how significant their contributions were to the study. In respect of the anonymity, the respondents were not made to provide their names or anything that could identify them and their responses.
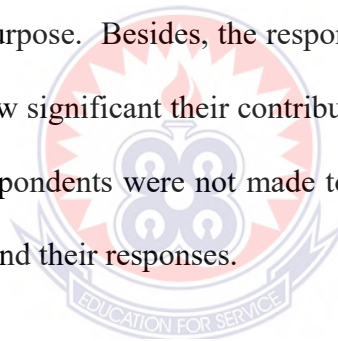
3.11 Data analysis

Data analysis is the process of organising data gathered into patterns and categories while looking for relationships and linkages (Patton cited in Kuranchie, 2021). According to Singh (2006), data analysis serves the following intentions: to make the raw data gathered meaningful; to obtain the significant results; to draw some inferences or make generalisation; and to estimate parameters. The data gathered from the head teachers on their use of ICT in the administration and management of their schools were analysed to achieve the study objectives.

Prior to the analysis of the data that was collected, the questionnaires were checked for consistency and accuracy of the responses. The data was analyzed using SPSS version

25. Both descriptive and inferential statistics (frequencies and percentages, mean and standard deviation, correlation and t-test) were employed for the data analysis. Specifically, the demographic data of the respondents were analysed using frequencies and percentages. Also, while Research questions 1 and 2 were analyzed using means and standard deviation, Research questions 3 and 4 were analyzed using frequencies and percentages. Moreover, correlation analysis was employed to test the first hypothesis while the second hypothesis was checked by using independent samples t-test. All the tests were considered statistically significant if the p value is less than 0.05 at 95 confident level. The results of the analysis are presented in tables.

Tableau representation of data analysis.

Table 1: Summary of Data Analysis

S/N	Research Questions/Hypothesis	Statistics
	Socio-demographic characteristics	Frequencies and Percentages
RQ1	What knowledge and skills do the headteachers possess in ICT in the management of basic schools in the Sagnarigu Municipality?	Means and Standard Deviation
RQ2	To what extent do the head teachers utilize ICT in the management of basic schools in the Sagnarigu Municipality	Mean and Standard Deviation
RQ3	What factors serve as drawback to the head teachers in the use of ICT in managing basic schools in the Sagnarigu Municipality	Frequencies and Percentages
RQ4	What management techniques could the headteachers adopt to improve ICT usage in the management of basic schools in the Sagnarigu Municipality	Frequencies and Percentages
H1	There is no statistically significant correlation between head teachers' knowledge and their level of ICT utilization in management of the schools	Pearson correlation
H2	There is no statistically significant gender difference in head teachers' utilization of ICT in the management of the schools	Independent samples t-test

CHAPTER FOUR

DATA ANALYSIS, PRESENTATION AND DISCUSION OF FINDINGS

4.0 Introduction

The previous chapter presented the methodology that guided the conduct of the study. This chapter is about the results that emanated from the data analysis, interpretation and discussion. The results are presented based on the socio-demographic characteristics of the respondents, the research questions and the hypotheses. The chapter is in three main sections: Section 'A' covers the demographic information of the respondents in the study, Section 'B' deals with the results that addressed the phenomena studied and 'C' concentrates on the discussion of the study outcomes. In both 'Section B' and 'Section C', the results that address the research questions are presented first followed by those on the hypotheses.

Section A: Demographic Information about the Respondents

The demographic information that was gathered about the respondents were sex, age, educational qualification, academic and professional qualification and years spent on headship. This information was relevant as it helped to know the kind of head teachers or respondents who participated in the study. The first personal information that was requested is the sex of the respondents. This enabled the researcher to know the sex distribution of the head teachers in the municipality. This analysis is provided in Table 1.

Table 1: Sex of Respondents

Sex of respondent	Frequency	Percentage
Male	80	69.6
Female	35	30.4
Total	**115**	**100**

Source: Field work (2022)

From Table 1, it is observed that, 80 respondents representing 69.6% of the headteachers are males whereas 35 representing 30.4% female. Thus, the males form the majority of the respondents who provided data from the study. This result implies that there are more males heading the basic schools in the Sagnarigu municipality than females.

The ages of the respondents were also solicited. The outcome of the analysis of the age range of the respondents are shown in Table 2.

Table 2: Age range of Respondents

	Frequency	Percentage
25-30 years	1	0.9
31 – 36	2	1.7
37 – 41	40	34.8
42 and above	72	62.6
Total	**115**	**100**

Source: Field work (2022)

Results from Table 2 show that only one of the respondents was within the age range of 25-30 years. Only two of them were between the age interval of 31 and 36. It is also observed that the respondents who were between 37 and 41 years 40 constituting 34.8% of the sample. Finally, 72 respondents representing 62.6% were 42 years or more.

It is clear from the results that the majority of the respondents were over 42 years, which means the heads of the basic schools in municipality were advanced in age. Besides, those who were more than 37 years constituted almost 35%. In all, over 90% of the headteachers are matured enough to head the schools.

As basic school heads, the need to ascertain their academic qualification was considered important and therefore they were asked to indicate it. The results derived from the data analysis are displayed in Table 3.

Table 3: Educational Qualification of Respondents

	Frequency	**Percentage**
Diploma	1	0.9
Bachelor's degree	90	78.2
Master's degree	24	20.9
Total	**115**	**100**

Source: Field work (2022)

Table 3 depicts the educational qualification of the head teachers in the study. The results show that only one respondent had diploma as a highest academic qualification while 24 representing 20.9% had attained Master's degree. The results demonstrated that the majority of the respondents (90) representing 78.2% had bachelor's degree as their highest academic qualification. Twenty-four representing 20.9% claimed they hold master's degree. It evident that the majority of the head teachers in the study were first degree holders, most of whom were at the JHS level while those with qualifications below first degree were at the primary level. With these levels of education and academic qualifications of the respondents, it could be assumed that they had acquired

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some knowledge and skills with the use of modern technology and ICT for their management functions.

The number of years the respondents had been head teachers of the schools was important to the researcher. It is believed that the number of years one serves as a head of school demonstrates how experienced he or she is. Hence, the researcher solicited for the number of years they had been heads of schools. The outcome of the data analysis is shown in Table 4.

Table 4: Respondents' Years of Headship

	Frequency	Percentage
2 - 5 years	38	33
6 – 10	54	47
15 years	23	20
Total	**115**	**100**

Source: Field work (2022)

From Table 4, the results specify the duration within which the respondents had been headteachers. The results indicate that 38 of the respondents representing 33% had been heads between 1 and 5 years. It is also observed that 54 representing 47% had been headteachers between 6 and 10 years whereas 23 representing 20% had been headteachers between 11 and 15 years.

The results show clearly that, the head teachers who had recorded the longest years of headship were those who had 6 to 10 years headship experience. Barely 30% of the respondents had been headteachers within the last five years. This means that about 70% of the respondents had more than five years headship experienced coupled with their teachership experience and with exposure to ICT, the headteachers should be in a proper position to perform their administrative roles proficiently. Five or more years

headship experience is no mean an achievement and that the headteachers in the municipality can be said to be experienced to hold administrative position in the education service.

Types 5: Technological tools possessed by respondents

Tools	Number
Desktop	12
Laptop	17
Tablet	33
Mobile	115
Scanners/printers	9

Source: Field work (2022)

Response obtained from Table 5 shows that all heads of the basic schools had access to a mobile phone and were able to use it successfully to send and receive information from teachers, SISOs and directors via WhatsApp as well as uploading and downloading documents, meaning they have some good knowledge in it. The table recorded 115 headteachers representing the majority and in fact the total sample having mobile phones. Next on the table is a tablet obtaining 33 respondents meaning few headteachers have access to tablets and only 17 of the have laptops. For that matter they are not able to use a laptop to perform certain functions such as doing presentations, preparing and performing financial reports. Then, only 12 of them had desktop in their offices and the lowest of one having scanners and printers to perform respectively.

It can be gleaned from the demographic data that more males are heading the basic schools in the municipality more than females. This tends to reflect the situation in Ghana where more males do attain higher educational qualification than females. The head teachers are mature and experienced in teaching and headship due to their long

service and higher educational attainment which are likely to provide them with the competence to use in managing their schools. The number of years of being heads of the schools is also encouraging to provide leadership skills for the management of the schools most especially if they possess good knowledge and skills in ICT.

Section B: Main Research Questions

Research question 1: What knowledge do the head teachers possess in ICT in the management of basic schools in Sagnarigu Municipality?

This section of the chapter covers the results of the data analysis on the main research questions that guided the study. All the four questions that were posed at the beginning of the study have been dealt with in this section. This research question sought to determine the headteachers' knowledge in the use of ICT for their administrative duties. Various questions on knowledge on ICT were posed to the respondents and the outcome of the analysis are presented in Table 6. The data was analyzed using mean and standard deviation. As the items that measured the headteachers' knowledge and skills in ICT was measured on a 5 point scale (1-5), the cutoff point or mean of determination is 2.5; mean values less than 2.5 connotes below average, those equal to 2.5 means average and those above 2.5 are high.

However, the data that was collected on the headteachers on ICT is presented prior to dealing with the research questions. The gathering of this information was deemed necessary so as to have a fair idea about the headteachers' ICT situation. The outcome of head teachers on ICT are presented in Table 5.

Table 6: Information of heads on ICT

	Yes	No
Do you have any ICT background?	102(88.7)	13(11.3%)
Do you have a personal computer?	101(87.8%)	14(12.2%)
Have you attended management training since your appointment as a head?	100(87.8%)	15(13.0%)
If yes, was ICT course incorporated in the training?	89(77.4%)	26(22.6%)
Have you ever attended training solely on ICT?	101(87.4%)	14(12.2%)
Do you have internet connectivity in your school?	24(20.9%)	91(79.1%)

Source: Field work (2022)

Table 5 depicts ICT background information of the head teachers of the basic schools. From the results, one hundred and five representing (89/77.4%) claimed they had ICT background; only 26 (22.6%) claimed they did not. The responses demonstrate that a vast majority of the head teachers are ICT literate, which is a good development. In this time and age, head teachers of basic schools also ought to be ICT literate and if over 70% of them had background in ICT, then, it is welcome news.

On the issue of the head teachers having their own personal computers, 101 (87.7%) responded affirmatively that they had their own personal computers. Only 13 (11.3%) of the head teachers did not have their own personal computers. The greater numbers of the head teachers possessing personal computers may be as a result of the successive governments' policies on distribution of computers to teachers. For instance, a few months ago, the government of Ghana distributed computers to some teachers in the country, which may have contributed in making a high number of head teachers in the municipality to have personal computers which they can use to perform administrative responsibilities.

Table 5 also indicates that most of the headteachers, 100 (87.5%), have attended management training since their appointment as head. This is also a good development and good step by the authorities of the education service. Capacitating the head teachers to acquire ICT competencies to enable them use ICT in the management of their schools is a good thing. Regarding internet connectivity in the schools, it was noted that only 24 (20.9%) schools had good internet connectivity. Regrettably, however, almost 80% of the basic schools in the municipality do not have internet connectivity to enable them use for their administrative duties.

Table 7: Knowledge in ICT usage

Knowledge in⋯	Mean	Std. Dev.
Operating computer on my own	4.04	1.01
Booting and shutting down computer	4.36	0.91
Typing and drawing using computer	2.23	1.19
Creating and saving document, folder etc	2.46	1.36
Retrieving and modifying document, folder etc	2.41	1.10
Using computer to store and process data	2.56	1.35
Using ICT to send and receive information	3.85	1.02
Using ICT to facilitate and make work efficient	2.44	1.29
Doing presentation to staff, superiors etc	1.92	1.31
Uploading and downloading documents	3.70	0.99
Preparing financial reports on capitation grant etc.	1.84	1.21
Total	**2.89**	**1.16**

Source: Field work (2022)

The items in the table show headteachers' knowledge in ICT. The result for the first item shows that most of the headteachers can operate computers on their on. A mean score 4.04 means that most of the headteachers are able to operate computers on their own and thus have high knowledge which is above the mean of determination. Again, the heads being able to boot and shut down computer with a mean of 4.36 and a standard deviation of 0.91, demonstrates that the headteachers have high knowledge on booting and shutting down computers.

Response of head teachers which indicated that they were able to use ICT to send and receive information via WhatsApp, email attracted a mean score of 3.85 indicating a high degree of knowledge in using ICT in communication. The headteachers' ability to upload and download document seems to be good as the responses resulted in a high mean score of 3.7. Uploading and downloading documents are parts of communication and the headteachers possessing knowledge in both of them is deemed good. When sending information to stakeholders, the headteachers are able to attach or upload relevant documents when there is the need to do that. In receiving information too, the head teachers are able to download documents. These sets of ICT knowledge (sending and receiving information as well as downloading and uploading information) would help the head teachers use ICT to perform their administrative duties, all other things being equal. On the headteachers' ability to use computer to store and process data, the mean score of 2.51 with a standard deviation of 1.35 was realized. This mean score indicates that their knowledge in this function is average.

The head teachers' knowledge in the rest of the functions found to be below average are, specifically, their knowledge in typing and drawing using computer recorded a mean of 2.23 with a standard deviation of 1.19, implying their ability to use computer to type as well as draw is low knowledge. The head teachers would not use computer to type most of the administrative work they perform due to their low ability to perform that function. They may either ask some teachers to type and draw for them or they would do that manually.

Besides, the head teachers' knowledge in using computer to create and save documents, folder etc, attracted a mean = 2.46 with SD = 1.36 which indicates a low knowledge. Also, their ability to retrieve and modify document, folder etc had a mean score of 2.41 which 1.10 indicates a low knowledge. On the head teachers' knowledge in using ICT accessories to facilitate and make work efficient obtained 2.44 with a standard deviation of 1.29. The mean score which is less than the mid-point implies that the head teachers' competence in ICT is less than average.

The head teachers' competence in the last two functions is very low as they attracted mean scores below 2.0. The result show that the head teachers' ability to do presentations to staff, superiors is low. This stems from the fact that their knowledge and skills in that function had a mean score 1.92 and a standard deviation of 1. 31 whereas their knowledge in using computer to preparing financial reports on capitation grant etc. attracted a mean score of 1.84 with a standard deviation of 1.21. The head teachers do not have good knowledge in the use of ICT to prepare financial reports on capitation. In performing this function annually, the head teachers may rely on some of their teachers especially those with Accounting and ICT background or they may be

using manual means. Using manual means of accounting annually is associated with a lot of challenges which have be curtailed with use of ICT.

The overall mean score demonstrating the headteachers' knowledge in ICT is 2.89 with a standard deviation of 1.16. The mean value conveys the message that the headteachers have relatively high knowledge and skills in ICT. This is because the mean score of 2.89 is a bit above the midpoint of 2.5.

Research question 2: To what extent do the head teachers utilize ICT in the management of basic schools in the Sagnarigu Municipality?

The second objective of the study is to determine the level of utilization of ICT by headteachers in the management of basic schools. This aspect is segmented into four: for general administration; personnel administration; financial administration; and student administration. The responses are summarized and presented in Table 8.
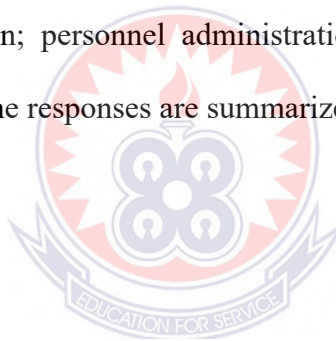
Table 8: Headteachers' Utilization of ICT

	Mean	Std. Dev.
General administration		
Store school, staff and students' records	2.53	1.43
Send and receive messages from superiors such as SISOs, directors etc.	3.21	1.45
Check GES, GNAT/NAGRAT etc. websites for announcements	4.14	0.95
Prepare for meetings, teaching and exam tables	2.39	1.39
Sub-total	**3.07**	**1.31**
Personnel/staff administration		
Send to and receive information from teachers	3.32	1.16
Monitor teachers' attendance and delivery	2.01	1.22
Supervise and evaluate teachers	2.05	1.30
Manage teaching resources	2.49	1.29
Duty rosters and ensure compliance	2.05	1.33
Sub-total	**2.38**	**1.26**
Financial Administration		
Validate teachers to be paid	4.50	0.95
Perform school financial activities	2.70	1.43
Prepare and submit financial reports to auditors	2.01	1.31
Maintain school financial records	2.20	1.22
Sub-total	**2.85**	**1.23**
Students Administration		
Enroll and register students	2.28	1.38
Data storage and student records	2.43	1.27
Monitor students' attendance and performance	2.49	1.41
Communicate with parents about their students' academic and social development	2.50	1.54
Sub-total	**2.48**	**1.40**
Grand-total	**2.69**	**1.30**

Source: Field work (2022)

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To know the headteachers' use of ICT for general administrative functions, four items were used to achieve that end. From the above table, considering the mean of determinations midpoint of 2.5, the mean value obtained is 2.53 with a standard deviation of 1.43. This indicates that their use of ICT to store school, staff and students' records is relatively high. They, therefore, use ICT in performing general administrative functions to some extent.

Pertaining to the head teachers' use of ICT in sending and receiving messages from superiors such as SISOs, Assistant superintendent (AD) supervision, directors of education and others, a mean of 3.21 with a standard deviation of 1.45 was realized. This result implies a relatively high utilization of ICT by head teachers in sending and receiving information from relevant publics. The headteachers' responses also revealed that they use ICT greatly to access information from their employers and unions via their websites. This is based on the fact that the mean score on the headteachers' use of ICT is 4.14. By far, this is the highest mean as can be seen in the Table. This finding implies a significant utilization of ICT by the headteachers' to access GES, GNAT/NAGRAT etc websites for information such as announcements on important events, activities and others that are relevant to their administrative responsibilities. However, the mean score of the headteachers' use of ICT to prepare for meetings, teaching and exam tables and others is 2.4, implying a low-level usage, suggesting that the headteachers do not largely use ICT to prepare such administrative functions. However, the mean value of the headteachers' use of ICT in performing general administrative duties is 3.07, which is high and a standard deviation of 1.31.

To measure the headteachers' use of ICT for personnel administration, five items were used. The respondents' responses on their use of ICT for staff personnel management are as follow: the responses show a mean score of 3.32 indicating a high use of ICT for

managing teachers in the schools. This stems from the fact that the mean value is above the cut-off point. It is however seen from the table that the headteachers' use of ICT to monitor teachers' attendance and delivery of instructions is low as the mean score (2.10) is below the cut-off point of 2.5. This tells that the headteachers do not immensely use ICT to manage teachers in the schools. They do not mostly use ICT in sending and receiving information from teachers.

The results also show that the head teachers rarely use ICT to monitor teachers' attendance and delivery. This is buttressed by the fact that the mean score (2.05) of the item is below the threshold. There is low utilization of ICT usage in supervising and evaluating teachers in the basic schools. Besides, the headteachers' use of ICT to manage teaching and resources is moderate as the mean score (2.49), which is almost equal to the standard mean of 2.5. The headteachers do not greatly use ICT in taking inventory of the instructional resources that are used by teachers in the teaching and learning in the schools.
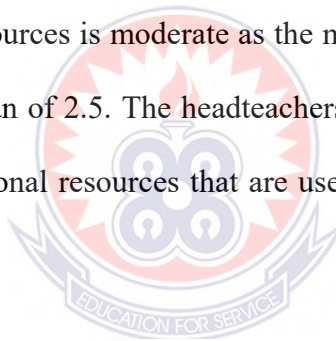
Lastly, the results indicate that the mean value (2.38) of head teachers' usage of ICT for the preparation of duty roster of teachers as well as it compliance is low. The mean is below the accepted one which indicates that duty rosters are not prepared using ICTs. The head teachers also do not use ICT to ensure teachers' compliance with the duty rosters.

This section represents how headteachers use ICT for financial administrative functions. Using ICT to validate teachers to be paid recorded the highest mean (4.50). The result means that most of the respondents often use ICT to validate their teachers to ensure that their salaries are paid to them. Also, a mean of 2.7 indicates that, ICT was often used by respondents to perform school financial activities. Moreover, many

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respondents rarely used ICT to prepare and submit financial reports to auditors with a mean of 2.01 and 2.2 mean regarding maintenance of school financial records.

The last part of the table above represents how respondents use ICT for student administration. The results show that, with a mean of 2.28, the head teachers rarely used ICT for enrollment and registration of students. Again, the head teachers' usage of ICT in data storage and students' records had 2.43, which implies that they sometimes used ICT to perform that function. The results further revealed that the head teachers averagely used ICT to monitor students' attendance performance. Finally, the results disclosed that the head teachers moderately used ICT in communicating with parents about their students' academic and social development. The mean value is 2.5.

The overall mean of the use of ICT in the administration and management of basic schools in the municipality is 2.69 which is slightly above the standard mean. The result indicates that the head teachers moderately use ICT in the administration and management of basic schools in the municipality.
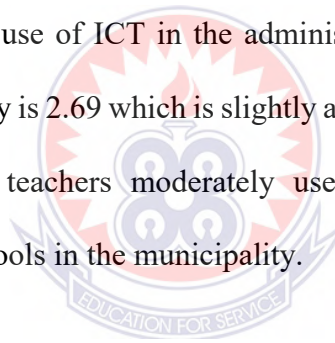
Research question 3: What factors serve as drawback to the head teachers in the use of ICT in managing basic schools in the Sagnarigu Municipality?

This question focused on challenges confronting the usage of ICT in management of schools. Respondents were asked to indicate their level of agreement to the items which analysed and presented in Table 9 below.

Table 9: Factors serving as drawback in the ICT in managing the basic schools

Challenges	Yes	Not Sure	No
Inadequate access to ICT tools and their accessories	77(66.9)	7(6.1)	31(26.9)
Inadequate competence in the use of ICT tools and their accessories	94(81.7)	1(0.9)	20(17.4)
Inadequate interest in the use of ICT tools and their accessories	18(15.2)	13(11.3)	84(73)
Inadequate training in the use of ICT tools and their accessories	89(77.4)	9(7.8)	17(14.8)
High maintenance cost of ICT tools and their accessories	107(93.1)	3(2.6)	5(4.3)
Unreliable power supply	105(91.3)	4(3.5)	6(5.2)
Unstable network connectivity	99(86.1)	6(5.2)	10(8.7)
Inadequate technical support in the use of ICT	88(76.6)	14(12.2)	13(11.3)
Inadequate funds to purchase ICT tools, accessories, data for internet etc.	110(95.6)		5(4.3)

Source: Field work (2022)

On the issue of inadequate access to ICT tools and their accessories 77 (66.9%) identified it as a challenge and only 31 (26.9%) said is not a challenge. Again, the majority of the head teachers 94(81.7%) identified inadequate competence in the use of ICT tools and their accessories as a challenge. Majority of the head teachers believed that they did not possess enough competence to manipulate ICT tools to perform their management responsibilities. Moreover, the least respondents indicated that, inadequate interest in the use of ICT tools and their accessories was not a challenge which had 18 representing 15.2%, as compared to 84 representing 73%. The results also show that 89 respondents equally identified inadequate training in the use of ICT tools and their accessories as a challenge representing 77.4% as compared to 17 respondents saying no representing 14.8%.

Besides, the majority of the head teachers identified high maintenance cost of ICT tools and their accessories as a challenge. Thus, 107 representing 93.1% as compared to 5 of 4.3% saying no. The majority of the head teachers indicated that the expenditure involved in repairing and getting the required accessories is high. The schools do not seem to have the wherewithal to incur those expenses.

Unreliable power supply is the next highest identified as a challenge in the table of 105 represent 91.3% compared to 5 of 4.3%. Electricity power supply is a huge problem in the northern part of Ghana. It is therefore not surprising that the head teachers find it a problem in their schools as well. Unstable network connectivity was also identified as a challenge obtaining 99 representing 86.1% as compared to 10 of 18.7%. Unstable internet connectivity is a problem to all sectors of the economy and the basic schools do not seem to be an exception as the head teachers claimed it is a factor that draws back their effort to integrate ICT in their administration of the basic schools.

Another challenge that was mostly identified is inadequate technical support in the use of ICT had 88 respondents representing 76.6% compared to 13 representing 11.3%. Finally, inadequate funds to purchase ICT tools, accessories, data for internet was also largely identified as a challenge obtaining 110 of 95.6% compared to 5 of 4.3%.

Research Q4: What management techniques should the head teachers adopt to incorporate ICT in the management of the basic schools?

This section also presents the respondents' views on the techniques that could be adopted or incorporate to enhance ICT usage in the administration and management of schools. The respondents were asked to indicate their agreement to the statements suggest the strategies indicated. The results of the data analysis are shown in Table 10.

Table 10: Management techniques to help incorporate ICT in management of basic schools

	Yes	No
Equipping schools with adequate ICT resources	102(88.7%)	13(11.3)
Special education for headteachers on the use of the internet	82(71.3%)	33(28.7)
Attendance of ICT capacity building, workshop, seminars etc	108(93.9%)	7(6.1)
Training of headteachers on the use of ICT in administration and management	104(90.4%)	11(9.6)
Provision of adequate funding for integration of ICT in management of schools	115(100%)	0(0.00)
Monitor usage of ICT in management of schools	86(74.8%)	29(25.2)
Transforming the ICT policy into action	75(65.2%)	40(34.8)
Adhering to the ICT integration plan road map	90(78.3%)	25(21.7)

Source: Field work (2022)

From the above table, on the issue of equipping schools with adequate ICT resources as a management technique, 102 representing 88.7% of the respondents agreed to it while only 13 representing 11.3% had a dissenting view. The results show that a vast majority of the headteachers endorsed the idea that for headteachers to be able to effectively use the ICT in management of school, the basic schools need to be well equipped with relevant ICT resources.

The results depict that the majority of the respondents believed that if headteachers are given special education on the use of the internet, incorporation of ICT in

administration and management of schools would be easy. Internet is very core in using ICT in every area including school administration that may account for the majority of the headteachers' agreement to the fact that headteachers need special education on it. Furthermore, the majority of the respondents agreed to the fact that, if headteachers do attendance ICT capacity building workshops, seminars and others, it would build the headteachers' competence to incorporate ICT in the administration and management of the schools.

On the need to train headteachers on the use of ICT in administration and management of schools, while only about 10% of the respondents did not hold that belief, an overwhelming majority of about 90% believed that would help their course. The majority of them agreed that for the teachers to be able to incorporate ICT in administration and management of the basic schools, they need to be trained on the use of ICT in administration and management. There is consensus by the respondents that provision of adequate funding is a sure way to have full integration of ICT in management of schools. Funds are the means of procuring both software and hardware of ICT resources needed to manage the schools.

Almost 75% of the respondents concurred that the need to monitor usage of ICT in management of schools is vital. However, 25% of them held a contrary view. A relatively majority of the respondents bought into the idea, to ensure an effective incorporation of ICT in administration and management of schools, there should be transformation of the ICT policy into action. In the 2000's, the state came up with ICT4D policy and since then there have been some policies on ICT and education. To them, without activating those policies, things would not work as expected. Lastly, almost 8o% of the respondents thought that adhering to the ICT integration plan road map would help headteachers to incorporate ICT in management of schools.

The responses show that the majority of the respondents (78.3%) agreed to the fact that to improve ICT integration into the management of basic schools, there is the need to adhere to the ICT integration plan road map. However, about 21% of the respondents did not consent to that. Lastly, transforming the ICT policy into action to ensure integration of ICT into the administration and management of basic school attracted a response of about 62% while about 35% of the respondents did not agree to that.

Testing of Hypotheses

Two hypotheses were tested in the study. The first one sought to determine the relationship between head teachers' knowledge and skills in ICT and their level of utilization of ICT in the administration and management of their schools while the second one sought to compare the male and female head teachers' knowledge and skills in the use of ICT for managing their schools.

Hypothesis 1: There is no statistically significant correlation between head teachers' knowledge and their level of ICT utilization in management of the schools

The section sought to ascertain correlation between knowledge in ICT and utilization of ICT in the administration and management of basic schools. Pearson correlation was used to analyse the data and the results of the data analysis are presented in table 11 below.

Table 11: Correlation between Knowledge in ICT and Use of ICT in Management of Schools

		Knowledge	Utilization
Knowledge	Pearson Correlation	1	0.230**
	Sig. (2-tailed)		.000
	N	115	115
Utilization	Pearson Correlation	0.230**	1
	Sig. (2-tailed)	.000	
	N	115	115

**Correlation is significant at the 0.05 level (2-tail)

The result of the analysis demonstrates positive relationship between head teachers' knowledge in ICT and utilization of ICT in the management of their basic schools (r of 0.23). Thus, the results show a moderate correlation between the knowledge and utilization of ICT in the management of the schools.

The result further shows that correlation is statistically significant ($0.000 < p=0.05$). The tested hypothesis revealed statistically significant positive correlation between head teachers' knowledge in ICT and their use of ICT in the administration and management of their schools. Therefore, the null hypothesis that there is no statistically significant correlation between head teachers' ICT knowledge and utilization of ICT in the management of there is rejected.

Hypothesis 2: There is no statistically significant gender difference in the head teachers' utilization of ICT in the management of their schools.

To test the hypothesis 2, independent samples t-test was applied. The aim was to compare the ICT knowledge and skills of male and female head teachers. The outcome of the analysis is presented in the table 12 below

Table 12: Independent sample t-test of head teachers' knowledge in ICT

	N	Means	SD	Df	t	p.
Male	80	25.30	7.76	113	2.379	0.019
Female	35	21.65	7.06			

Source: Field work (2022)

The results of the Levene's test was 0.62 which means that equal variances were assumed. The result shows that the mean ICT knowledge and skills of the male head teachers is 25.30 while that of the female head teachers is 21.65. The results show a significant difference in the mean of ICT knowledge and skills of male and female head teachers Male (M= 25.30, SD=7.06), t (115) = 2.379, p=0.019). The male head teachers' ICT knowledge and skills is found to be better than that of the female head teachers. In view of the findings, the hypothesis that there is no statistically significant difference in the male and female head teachers' knowledge and skills in ICT is rejected. The male head teachers' knowledge and skills in ICT is higher than that of the female head teachers.

4.1 Discussion

Background Information about the Respondents

This section covers the discussion of the findings of the study. The major findings of both demographic characteristics and the main study intentions are discussed in relation to relevant literature. While the first part of the section discusses findings of the demographic characteristics of the respondents, the second part deals with the study objectives. The following are the demographic characteristics of the respondents that the study solicited; sex, age, educational qualification. Other information the head teachers provided concerning some background information on ICT are head teacher, and ICT training status.

The study revealed that the majority of the respondents were males while a few were females. The results mean that the males form the majority of the respondents who provided data for the study. In the basic system of education, the male head teachers are more than female head teachers.

It is clear from the results that a vast majority of the respondents were over 40 years, which means that the head teachers of the basic schools in the municipality were adults and matured. The results also demonstrate the vast majority of the respondents had bachelor's degree as their highest academic qualification. This seems to imply that, most of the head teachers were well educated and could manage the schools well. With proper induction and exposure to ICT, such a calibre of headteachers could handle administrative matters well. The large number of the headteachers possessing a bachelor's degree may be attributable to the wide spread of regular, distance and sandwich education programmes that have been rolled out by the public and private universities across the length and breadth of the country. Teachers and headteachers for

that matter are probably taking advantage of the university education which has been brought to the door steps of prospective applicants. The headteachers having higher educational qualification is good because at the Ghana Education Service, one needs to be a diploma holder to head a basic school.

The results further revealed that majority of the respondents had more than five years headship experienced coupled with their teachership experience and with exposure to ICT, the headteachers should be in a proper position to perform their administrative roles proficiently. Five or more years headship experience is no mean achievement and that the headteachers in the municipality can be said to be experienced in the administrative position in the education service.

On the issue of the head teachers having their own personal computers, the majority of the respondents claimed that they had their own personal computers. This means that it was only a few of the head teachers who did not have their own personal computers. The greater numbers of the head teachers possessing their personal computers may be as a result of governments' policies on and distribution of computers to teachers. The finding is in support of Natia and Alhassan (2015) who stated that the head teachers' access to ICT resources that are not necessarily intended for the school is promising. The findings mean that the head teachers use their own personal computers for the management functions of their schools. This outcome confirms the study carried out by Livimus (2013) which found only a few academic and administrative staff had computers officially given to them to perform their duties. Majority of the administrators relied on their personal computers to perform their administrative duties. The results also imply that most of the head teachers in the basic schools in the municipality are conversant with the ICT and its usage.

Further, the results indicated that most of the head teachers have not attended management training since their appointment as a head. The finding concurs with Higgins, Beauchamp and Miller (2007) that although it is evident that training and literacy in the use of ICT leads to effective usage of technology, very few basic school heads teachers might have had earlier training in computer technology. In Dei's (2018) study, he found that the majority of head teachers in basic schools lacked formal ICT training many respondents rarely use ICT to prepare and submit financial reports to auditors. Abuga's (2014) study also discovered that most of the heads of schools who took part in the study had not undergone formal training in ICT so as to enable them to effectively use ICT in their school administration.

Regarding internet connectivity in the schools, only a few of the schools were hooked to the national grid. Regrettably however, majority of the basic schools in the municipality do not have internet connectivity to facilitate their ICT usage and administrative duties in the schools. According to Natia and Alhassan (2015), that despite the fact that Ghana's government recognizes the importance of ICT in education, the status of ICT infrastructure and tools on the ground is not promising, with access falling short of other developing nations. Mutisya (2017) also found ICT was used for students' registration records, communicating with parents and communicating with teachers. The finding is not different from Buabeng-Andoh's (2015) assertion that some basic school managers in Ghana still have inadequate knowledge and lack competence in computer hardware and software applications. Their ability to use computer to type as well as to draw is low.

This finding is in line with that of Alhassan (2014) who also reports that in spite of the availability of ICT tools such as computers, the ability to use them for management and administrative purposes in primary and JHS by male and teachers is weak. Most of the schools had access to stable electricity supply but lacked computers.

4.2 Knowledge in Information Communication Technology

Findings indicated that a few of the head teachers have some knowledge in ICT. The head teachers had good knowledge in operating computers on their own, booting and shutting down computers, using ICT in sending and receiving information and downloading and uploading documents. Generally, the headteachers have average knowledge in ICT which they use in the administration and management of the schools. The fact that the head teachers had moderate level of knowledge on ICT is contrary to the notion that teachers and head teachers in Ghana, lack confident in the use of ICT, particularly at the basic level which earned them the name "Born before Computer (BBC)". According to Buabeng-Andoh (2015), in spite of the current technological advancements, they lack understanding of the usage of ICT, which has resulted in their inability to proficiently use ICT in managing their schools. The head teachers in this study did not have good knowledge on the use of ICT in typing and drawing, doing presentation to staff, superiors and others as well as preparing financial reports on capitation grant.

The finding of this study that the head teachers in the Sagnarigu municipality have average knowledge in ICT for managing their schools corroborates that of Owen and Valensky (2011) that school leaders possessed little competence in the use of ICT for administrative functions. The finding is consistent with that of Afshari et al (2010) who found that school heads had moderate level of competence in using

telecommunications, networking, set up, maintenance trouble shooting of equipment and media communication. Chapman and Nahck (2004) also found that many teachers and school administrators did not have the competence for using technological resources in addition to scarce resources and cost of acquiring and maintaining equipment to run schools.

Mang'ando (2015) also discovered that the school leaders' competence in ICT to undertake their administrative practice was inadequate. Although there was availability of computers in the schools, the heads of schools did not possess adequate competence in utilizing them for their administrative duties. Again, the finding of this study corroborates that of Said (2015) who found that school leaders had inadequate knowledge in ICT usage in administrative practices although they had good perception about it and were prepared to learn ICT to manage their schools. Saitoti cited in Makewa et al (2013) bemoaned the low usage of ICT in school administration. The author commented that after years of introducing ICT syllabus into the school system, educators had seen the need to use ICT in teaching but not for administrative practices.

4.3 Level of Information and Communication Technology Utilization by Head teachers

The head teachers use of ICT in the administration and management of basic schools was gauged from four perspectives: general administrative functions, personnel administrative functions, student administrative functions and financial functions. The study disclosed that low usage of ICT by the head teachers in the management of teacher personnel function. The mean value was below the standard value which indicates that the head teachers' use of ICT in managing staff's affairs is below average. The staff personnel issue that the head teachers largely use ICT for is sending and receiving from information from teachers and, to some extent, managing the teaching

and resources that teachers use for instructional delivery. However, they do not extensively use ICT in monitoring teachers' attendance and instructional delivery, supervise and evaluate teachers and use it to prepare duty rosters and ensure compliance.

Again, the head teachers' use of ICT for student personnel functions is below average. The mean value for the use of ICT in performing for students is 2.48 which is below the standard mean value. The only issue about students that the head teachers marginally use ICT in performing is communicating students' performance to their parents. At the end of the term, the head teachers seem to send students' terminal report to parents via ICT. Therefore, they did not seem to extensively use ICT in enrolling and registering students, recording students' records, and monitor students' attendance and performance. The finding of not high usage of ICT in performing official responsibilities corroborates that of Fetaji (2018) who also found that, there was low use of ICT in administrative work of the schools.

This is contrary to the assertion that ICT is used to help in management of students' records and that if it is fully utilized, it helps in the management of students in schools (Zainlly, 2008). Katitia et al (2019) also avers that ICT resources help heads of schools to monitor enrolment of students in schools. The finding rather contradicts the discovery that ICT was extensively used for registration records of students. This is consistent with a study finding that schools still offer statistical returns to the district education and provincial offices via letter posts, couriers or by telephone conversation which are slow, expensive and experience errors.

On the head teachers' use of ICT in performing financial functions as part of their school administration, the study found a moderate usage. The mean score for that was

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2.85 which is slightly above the standard mean. The head teachers use ICT in performing some school financial activities as well as very well using ICT in validating teachers for them to be paid. Validation of teachers is a government policy that obliged all public sector workers to be validated every month before they are paid. So, teachers are required to perform this function at the end of every month before teachers' salaries are paid to them. As it is a monthly exercise, head teachers seem to have acquired the knowledge needed to live up to expectation hence their high score in the use of ICT in school administration and management. The finding is consistent with Kawade (2012) who also found that in school, ICT resources are used to keep records of financial documents, stock recording and documents of students.

The function that the head teachers were found to be using ICT in performing general administrative duties in the schools. The mean score for the use of ICT in performing general administrative duties was 3.07 which is way above the standard mean. The results show that the head teachers extensively use ICT in performing administrative functions. Most especially, the head teachers seem to use ICT in gathering and storing information about the school itself, staff and students, sending and receiving messages from superiors such as SISOs, AD supervision, directors of education and others. This finding is consistent with Muriko (2015) study finding which revealed that most of the school leaders used ICT for clerical activities. ICT was not immensely used to perform other school administrative functions.

The results on the overall usage of ICT in the administration and management of the basic schools in the municipality is slightly above average. This stems from the fact that the mean score was 2.69 which is slightly above average. It can be said that generally, the head teachers' use of ICT in the administration and management of the basic schools is slightly above average. This finding contradicts the notion that in spite

of the relevance of ICT in school management function the rate at which head teachers in basic schools use ICT in school management is low (Selwood, 2014). It also contradicts what had been found in countries like China, India and Thailand where ICT was used effectively in performance of school management functions. In the schools in those countries, ICT is mostly used by heads in performing functions such as examinations and co-ordination (Bajpai, 2010). Averagely, the respondents used ICT to monitor students' attendance, performance and also communicated with parents about their students' academic and social development.

The finding of low usage of ICT in undertaking administrative and management functions of school leaders corroborates many studies such as Singh and Muniadi (2012), Day and Leithwood (2007), Mumba (2009), Qureshi and Abro (2016), Mutisya et al (2017), Katitia et al (2019) and Thankgod and Vulasi (2020). The various studies also found that although ICT is useful in school administration and management, its utilization is not encouraging in the schools where the studies were conducted.

4.4 Factors that Serve as Drawback to Head teachers' Use of ICT in Managing Schools

The study found the following as the major drawbacks to the head teachers' bid to utilize ICT in the management of the basic schools in the municipality: inadequate ICT tools and accessories, inadequate competence in ICT, Inadequate training, high cost of maintenance, unstable power supply, unreliable internet connectivity and inadequate funds. A study conducted by Serah (2014) found that the following challenges facing the schools: inhibit of schools to acquire computers, absence of electricity, lack of funding, insufficient building space, lack of available and trained staff, and poor security were drawbacks to ICT usage. Similarly, Manduku et al. (2012) found limited

electricity or internet infrastructure in rural areas, limited technical support staff, predominant minority languages, and underqualified teaching staff as challenges confronting the use of ICT in managing schools.

The result of the study is consistent with the finding of Serah (2014) in Kenya. Serah (2014) found that there were a number of challenges facing effective implementation of ICT in schools in Nakuru North District in Kenya. These challenges included few computers and computer labs, insufficient internet connectivity, power unreliability, and lack of sufficient equipment. Kankam-Boadu (2020) further states that the lack of or insufficient computers in primary schools is a key barrier to head teachers' use of ICT in management responsibilities. Mutisya (2017) suggested that computer training for all heads and teachers; all schools should be internet connected to enable heads and teachers to use ICT in schools.

This study found that the basic schools in the Sagnarigu municipality did not have funds to acquire most ICT tools that they needed for the administration and management of their schools. This finding is in line with the findings of a survey by Abuga (2014) who concluded that the majority of headteachers did not utilize any type of ICT in the management of their schools. It also supports the findings of Dei (2018) who found inadequate funds as a challenge confronting the use of ICT in school administration. That also accounts for why Oluoch (2016) suggested that school heads need to secure funding from communities, donors etc to procure ICTs resources to help in the management of schools. Inadequate funds to purchase ICT tools, accessories, data for internet etc were also largely identified as a challenge in using ICT resources to manage the schools in the study area. This supports Mue, Itegi and Kyalo (2014) who found

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that school heads indicated financial constraints as a major challenge they had in the use of ICT in their administration.

The competence to use ICT was also found to be a challenge. The majority of the respondents concurred with the fact that, if headteachers do attendance ICT capacity building workshop, seminars and others, it would give the headteachers the competence required to incorporate ICT in the administration and management of basic schools. In view of such situations, Opoku (2016) suggested that teachers and headteachers of basic schools ought to be taken through in-service training in the use of ICT so that they can apply the knowledge in their school administration. Thomas (2011) supports this call and therefore urged that headteachers need to have some basic computer training and skills in order to use computers for school management.

A study conducted by Zain, Hanafi and Idrus (2004) discovered the following factors as hindrance to the full implementation of the ICT policy in schools in Malaysia. The country's ICT policy plan had been rolled out, yet it had not been fully integrated in administration and management of school system. Toyo (2017) also found the following as challenges in the use of ICT for record management; inadequate funding, inadequate security measures and inadequate software.

Azameti and Adjei (2013) contend that in spite of the fact that information management has reckoned as a vital transformation in the previous decades, records management via the use of ICT has become one of the most challenging jobs connected with educational service delivery in most Ghanaian basic schools. The study suggested that training of heads and teachers, government making heads go through compulsory computer training, improving internet connectivity etc. Also, Katitia et al (2019) recommended ICT should be used to manage student, staff and teaching and learning. This is because

effective recording keeping is essential to schools' progress. It also helps to have accurate data on student enrolment, staff and effective planning and management of schools. Singh et al (2012) contend that ICT is used in educational management and helps a lot. They also said that administrative and management staff use ICT resources to keep interactions and connections, operate financial duties, saves records, process files and documents and gather data.

Lastly, most of the respondents thought that adhering to the ICT integration plan road map would help headteachers to incorporate ICT in management of schools. Without activating those policies, things would not work as expected.

4.5 Management strategies

It became evident in the study that for school leaders to incorporate ICT into management of the basic schools, government should provide funds to the schools. Similar calls have been made. Some of them are Makewa et al (2013) who indicated that as ICT is useful for supervision of instructions and student functions essential, schools should be equipped with ICT infrastructure to help their operations. They also requested that congenial atmosphere should be created in school to facilitate implementation of ICT in management of schools.

Abuga (2014) recommends strategies for expanding ICT in these schools, including increasing the number of computers (as indicated by 63 percent of respondents in the study), teacher training on ICT, having adequate forms of ICT, and requesting the government to donate to public schools to facilitate ICT integration in human resource management in public schools. This corroborates the respondents' assertion that ICT infrastructure in the schools should be expanded. According to Buabeng-Andoh (2012), the proportion of computers used for administrative purposes in Ghana's primary

schools is extremely low, slowing communication between schools and the outside world. It also has an impact on decision-making and the execution of educational activities in primary schools, contributing to the high prevalence of ICT illiteracy.

Another suggestion that was given by most of the respondents is the need to training the school heads in ICT. Opoku (2016) also has requested that teachers and headteachers of basic schools should get at least in-service training in the use of ICT. This is because Mabiki (2017) observed that school leaders play key roles in integrating ICT in management of schools. They called for both private and public investment in ICT in schools.

According to Oguta, Egessa and Musiega (2014), ICT use among headteachers improves day-to-day school administration and helps schools to improve efficiency and cope with the quickly changing environment in managing duties. When Kukali et al (2018) found that financial and administrative support was not enough, they recommended increased funding for schools and in-service training on ICT for school heads. Means (2010) also supports the idea that integrating ICT into education needs better funds and continuous effort to succeed.

Egboka (2012) also contended that provision of access to digital technologies and internet, and training of stays on new digital tools can help improve integration of use of ICT in to schools' administration. A study by Thankgod and Vulasi (2020) came up with the following as the strategies that can be used to improve ICT usage in senior high schools: creating conducive environment, training of teachers and administrators on the use of ICT, improve power supply, adequate finding among others. On their part, Ogunode et al (2021) suggested that for primary schools to be able to use ICT in their administrative practices, the government need to increase funding of the schools, give

enough ICT facilities, offer regular training and retraining of administrative staff, ensure constant power supply, subsidize cost of ICT and ensure stable internet services across the country.

The finding indicates that the head teachers' knowledge and skills in ICT and the level of utilization are moderate. The analysis further found significant correlation between head teachers' knowledge and skills in ICT and level of utilization of ICT in administration and management of their schools. It can therefore be concluded that the level usage of ICT in the management of the schools is significantly predicted by the knowledge and skills in ICT. If the head teachers are trained in the use of ICT, their use of ICT in the administration and management of schools will be high. This seems to agree with the assertion by Saitoti (2007) who said that the increased computer literacy of school leaders is a prerequisite for their use of technology in the management of schools.

The study also found statistically significant difference in the knowledge and skills in ICT of the male and female head teachers of the basic schools in the Sagnarigu municipality. The male head teachers tend to possess higher knowledge and skills in ICT than their female counterparts.

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CHAPTER FIVE

SUMMARY OF FINDINGS, CONCLUSIONS AND

RECOMMENDATIONS

5.0 Introduction

This is the last chapter which presents the summary of the research process and the major findings that emanated from the study. The conclusions that are made based on the findings of the study and appropriate recommendations are also found this chapters. The limitations of the study which can affect the quality of the study findings as well as suggestions for further research are included in this last chapter of the write-up.

5.1Summary of the study

In this time and age, most sectors of the country including the education sector are using ICT for their various operations to achieve their institutional goals. In the various levels of the education sector, studies had revealed that ICT has been used in both teaching and learning process and administration and management. Most especially, studies had been done to investigate the use of ICT in the management of senior high schools and the tertiary sectors while little had been done about the usage of ICT in the administration management of basic schools. This study was therefore carried out to unravel the extent to which ICT is being used for effective management of basic schools in the Sagnarigu Municipality in the Northern region of Ghana. Four main objectives were set for the study to achieve while four research questions and two hypotheses guided the conduct of the study. The objectives of the research are to:

1. examine head teachers' knowledge in ICT in the management of basic schools in the Sagnarigu Municipality.

2. determine the level of utilization of ICT by head teachers in the management of basic schools in the Sagnarigu Municipality.

3. ascertain the drawbacks to the usage of ICT by head teachers in the management of basic school in the Sagnarigu Municipality.

4. identify management techniques that could be adopted to improve the usage of ICT by head teachers in the management of basic schools in the Sagnarigu Municipality.

5. compare male and female head teachers' utilisation of ICT in the management of the basic schools in the Sagnarigu Municipality.

The following research questions were formulated to guide the conduct of the research:

1. What knowledge do the head teachers possess in ICT in the management of the basic schools in the Sagnarigu Municipality.

2. To what extent do the head teachers utilise ICT in the management of the basic schools in the Sagnarigu Municipality.

3. What drawbacks confront the head teachers in the use of ICT in managing the basic school in the Sagnarigu Municipality.

4. What management techniques could the head teachers adopt to improve ICT usage in the management of the basic schools in the Sagnarigu Municipality.

The research also tested two hypotheses which are:

1. Ho: There is no statistically significant correlation between headteachers' knowledge and their level of ICT utilization in management of their schools in the Sagnarigu Municipality.

2. Ho: There is no statistically significant gender difference in head teachers' utilization of ICT in the management of their schools in the Sagnarigu Municipality.

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The study followed the quantitative approach and descriptive survey design in view of the set objectives. To gather appropriate data for analysis to answer the research questions, headteachers of the basic schools in the municipality formed the study population. Simple random sampling technique was used to select 115 respondents. Self-administered questionnaire was used to gather data from the respondents after it had been tested for reliability. The data gathered were analysed using statistical techniques such as percentages and frequency, mean and standard deviation correlation and independent samples t-test.

The following emerged as major findings of the study

1. That the head teachers in the Sagnarigu municipality possess relatively high average knowledge in ICT in the management of their schools.

2. The head teachers in the Sagnarigu municipality do not extensively use ICT in the administration and management of basic schools. There is relatively high use of ICT by the head teachers in the management of teacher personnel function. They somehow use ICT for staff personnel issues. However, they do not extensively use ICT in monitoring teachers' attendance and instructional delivery, supervise and evaluate teachers and use it to prepare duty rosters and ensure compliance.

3. The head teachers' use of ICT for student personnel functions is below average. The mean value for the use of ICT in performing for students is low. They did not extensively use ICT in enrolling and registering students, recording students' records, and monitor students' attendance and performance. They however largely use ICT in performing financial functions such as school financial activities and validation of teachers to enable their salaries to be paid.

4. The head teachers in the municipality extensively use ICT in performing administrative functions. Most especially, the head teachers seem to use ICT in gathering and storing information about the school itself, staff and students, sending and receiving messages from superiors such as SISOs, AD supervision, directors of education and others. The overall usage of ICT in the administration and management of the basic schools in the municipality is slightly above average.

5. The study results disclosed that moderate numbers of the head teachers have some knowledge in ICT. The headteachers have average knowledge in ICT which they use in the administration and management of the schools.

6. The study found that the basic schools in the municipality encounter challenges with the use of ICT in the various basic schools. Some of the challenges are inadequate computers, inadequate electricity, lack of funding, insufficient ICT knowledge and skills. The competence to use ICT was also a major factor. Most of head teachers do not possess the skills to use computers for school management.

7. Respondents suggested that for school leaders to incorporate ICT into management of the basic schools, the following be incorporated: training of heads and teachers on ICT usage, making new head teachers to go through compulsory computer training, government making funds available to schools, improving internet connectivity and adhering to the ICT integration plan road map.

8. The study found a weak correlation between knowledge on ICT and level of utilization of ICT in the administration and management of their schools.

9. The study found gender difference in the head teachers' knowledge and skills on ICT. The male head teachers' knowledge and skills on ICT is better than the female.

5.2 Conclusions

Head teachers' use of ICT in the administration and management of basic school was the main idea of the study. Having found that the head teachers' knowledge in ICT above average, it is likely to affect their administrative performance. Most especially the female head teachers' ICT knowledge was not high as compared to the male head teachers. Their low level of ICT utilization in the administration and management of the basic schools can impinge on their work. This is true because the study found significant relationship between knowledge in ICT and level of utilisation. The higher knowledge and skills in ICT, the more head teachers would use ICT in the management of their schools and the opposite is true where there would be low usage of ICT in the management of basic schools when the head teachers possess little knowledge in ICT.

The challenges such as inadequate ICT resources, inadequate ICT knowledge etc hamper the head teachers' use of ICT in the administration and management of the basic schools. The head teachers who have some ICT tools may not be able to fully use them in the management of their schools due to their inadequate competence in the use of ICT. There was inadequate use of ICT in the management of the basic schools. The head teachers also had low level of ICT use. The inadequate ICT tools makes it impossible to incorporate ICT in the management of the schools.

The findings of the study seem to suggest that the head teachers were not taking advantage of the opportunities provided by the technological advances to improve school administration and management. This has the tendency to thwart the progress

and development of the schools which is not a welcoming idea. This calls for urgent steps to be taken by stakeholders of education in the municipality to address the situation so that the management, teachers and students in the basic schools would benefit from ICT in diverse ways.

5.3 Recommendations

From the study findings and the conclusions drawn, the following are recommended to help improve headteachers' use of ICT in the administration and management of schools.

1. The study revealed inadequate ICT tools in the various schools used by head teachers. It is therefore recommended that both the private and public sectors of the economy should mobilize funds to acquire ICT resources in the basic schools in the municipality to enable the head teachers use them in their administrative and management of the schools.

2. Ghana Education Service and other stakeholders should offer ICT training to head teachers of the basic schools to enable use ICT into their administrative duties.

3. Teacher unions such as NAGRAT and GNAT should sponsor ICT training programmes for their members to equip them with the competence to manage their schools. This training should focus more on female head teachers were found in this study to lag behind their male counterparts in the use of ICT.

5.4 Limitations

The conduct of the study encountered some limitations including the following. The study used only questionnaire to gather data for the study and for that matter the real use of ICT in the management of the schools could not be verified. The use of structured

instrument also did not allow the respondents to provide some additional data that could have enriched the findings of the study.

Studies have shown that for people to use ICT well, they need to have good knowledge, skills, perception and attitude. Good attitude would motivate them to use it. In this study, the researcher did not examine attitude of head teachers and this is considered a limitation, in the sense that, a probe into perception and attitude could have yielded further information as why the utlisation of ICT in the management of the schools is low.

As the study was conducted in only one municipality in the country and that the sample size is not big hence the findings cannot be generalized on the entire head teachers of basic schools in Ghana. The limited scope of the study also limits the generalisability of the findings. More schools in more districts, municipalities and metropolitan authorities need to be covered to portray the nationwide situation and to improve on the generalisability of the findings.

5.5 Suggestions of further study

From the results and limitations of the study the following have been suggested for further research:

Further studies should, in addition to structured instrument, make use of observation to ascertain the head teachers' usage of ICT in school administration. This will help bring out more data on the practical ICT usage in the administration of basic schools.

Further research should adopt both structured and unstructured instruments to gather adequate information to address the research problem. More especially, the unstructured instrument will enable the participants to provide information of head teachers' utilization of ICT in management of basic schools beyond the issues that the

researcher will provide. In that kind of research, the respondents will not be restricted to only the issues on head teachers' use of ICT in management of basic schools that the researcher will request.

A comparative study of head teachers of public and private basic schools' utilization of ICT in administration and management of their schools is also suggested. The study will provide chance for educational authorities in the country to knowledge differences or otherwise and which one to assist in enhancing their usage.

The study was done in only one district in the northern region of Ghana. So, to know the nationwide situation of head teachers' utilization of ICT in the administration and management of basic schools, it is suggested that similar studies should be conducted in the other districts.

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APPENDIX

QUESTIONNAIRE FOR HEADTEACHERS

Dear respondent,

I am a student conducting research on *use of Information Communication Technology (ICT) in the management and administration of basic schools.* The research is purposely for academic purposes. Kindly answer the questions honestly and precisely as possible. Responses to these questions will be handled confidentially and anonymously. Please, do not write your name or school on the questionnaire.

Please, indicate your answer by ticking (√) in the boxes and filling in the spaces where necessary.

Code............................... Date...

Part A: Personal Information

INSTRUCTION: *Please tick (√) to indicate your choice or response to a question.*

1. Sex: (a) Male   [   ]   (b) Female   [   ]
2. Age: (a) 20-30 years   [   ]   (b) 31-40yrs   [   ]
                 (c) 41-50yrs   [   ]   (d) 51 and above   [   ]
3. Educational Qualification:
                 (a) Certificate   [   ]   (b) Diploma   [   ]
                 (c) Bachelor's Degree [   ]   (d) Master's Degree   [   ]
                 (d) Others. Please specify…………………………………
4. What is your area of specialization as a teacher? …………………………………
5. For how long have you been a head teacher of this school?
                 (a) 1- 2 years   [   ]   (b) 3-4 years   [   ]
                 (c) 5-6years   [   ]   (e) Over 6years   [   ]
6. Have you received any ICT training before?   (a) Yes [   ] (b) No   [   ]
7. What type of technological tools do you have for your office (Multiple responses are possible)
    Desktop [   ] Laptop [   ] Tablet [   ]   Mobile phone [   ]   Scanners/ printer
    Any other …………..
Do you have a personal computer?   Yes [   ]   No [   ]
Have you attended management training since your appointment as a head?
        Yes [   ]   No [   ]
If yes, was ICT course incorporated in the training?   Yes [   ]   No [   ]
Have you ever attended a training solely on the of ICT?   Yes [   ]   No [   ]
Do you have internet connectivity in your school?   Yes [   ]   No [   ]

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PART B: MAIN ISSUES OF THE STUDY

Knowledge in ICT in the management of the basic schools

My knowledge in	Very Low	Low	Moderate	High	Very High
operating computer on your own					
booting and shutting down computer					
typing and drawing using computer					
creating and saving document, folder etc					
retrieving and modifying document, folder etc					
using computer to store and process data					
using ICT to send and receive information via whatsapp, email etc					
using ICT accessories to facilitate and make work efficient					
doing presentation to staff, superiors etc					
uploading and downloading documents					
preparing financial reports on capitation grant etc					

Any other (please, specify) ……………………………………………………

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Head teachers' use of ICT in management schools

I use ICT and its tools to......	Never	Rarely	Sometimes	Often	Always
General administration					
store school, staff and students' records					
send and receive messages from superiors such as SISOs, directors etc					
check GES, GNAT/NAGRAT etc websites for announcements					
prepare for meetings, teaching and exams time table					
Personnel/Staff administration					
send to and receive information from teachers					
monitor teachers' attendance and delivery					
supervise and evaluate teachers					
manage teaching resources					
duty roster and ensure compliance					
Financial administration					
validate teachers to be paid					
perform school financial activities					
prepare and submit financial reports to auditors					
maintain school financial records					

Student administration					
enrol and register students					
data storage and student records					
monitor students' attendance and performance					
communicate with parents about their students' academic and social development					

Any other (please, specify) …………………………………………………

Challenges confronting usage of ICT in management of the school

	Yes	Not sure	No
Inadequate access to ICT tools and accessories			
Inadequate competence in the use of ICT tools and their accessories			
Inadequate interest in the use of ICT tools and their accessories			
Inadequate training in the use of ICT tools and their accessories			
High maintenance cost of ICT tools and accessories			
Unreliable power supply			
Unstable network connectivity			
Inadequate technical support in the use of ICT			
Inadequate funds to purchase ICT tools, accessories, data for internet			

Any other (please, specify) …………………………………………

….……………………………………………………………………………

Management techniques to incorporate ICT in management of schools

	Yes	No
Equipping schools with adequate ICT resources		
Special education for headteachers on the use internet		
Attendance of ICT capacity building, workshops, seminars etc		
Training of Headteachers on the use of ICT in administration and management		
Provision of adequate funding for integration of ICT in management of schools		
Monitor usage of ICT in management of schools		
Transforming the ICT policy into action		
Adhering to the ICT integration plan road map		

Any other (please, specify) …………………………………………………………

…..…………………………………………………………………………………………