UNIVERSITY OF EDUCATION, WINNEBA

THE INTEGRATION OF ICT IN THE MANAGEMENT OF SENIOR HIGH SCHOOLS IN WA MUNICIPALITY

DIA-UL-HAQ BRAIMAH SEIDU

MASTER OF SCIENCE

2020

UNIVERSITY OF EDUCATION, WINNEBA

THE INTEGRATION OF ICT IN THE MANAGEMENT OF SENIOR HIGH SCHOOLS IN WA MUNICIPALITY

DIA-UL-HAQ BRAIMAH SEIDU

A Dissertation in the Department of Information Technology Education, Faculty of Technical Education, submitted to the school of Graduate Studies in partial fulfilment of the requirements for the award of the degree of Master of Science (Information Technology Education) in the University of Education, Winneba

MAY, 2020

DECLARATION

STUDENT'S DECLARATION

I, SEIDU BRAIMAH DIA-UL-HAQ, declare that this dissertation, 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 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 the work was supervised in accordance with the guidelines for supervision of dissertation as laid down by the University of Education, Winneba.

DR. SAMUEL ADU GYAMFI

SIGNATURE: ……

DATE: ……

DEDICATION

To my wife Anatu Abu and Daughter Alesha Mwiniguubu.

ACKNOWLEDGEMENT

I would like to express my profound gratitude to my supervisor from Dr. Samuel Adu Gyamfi for his wonderful mentorship and encouragement and above all a clear guidance through the dissertation process. Dr. May the Almighty bless you abundantly.

All the lecturers of ITE department of the School of Technology, Kumasi, I thank you for your immense contribution to my academic life.

I also wish to acknowledge the assistance I received from the headmasters, staff and students of the ten schools I conducted the research with. Without their cooperation and participation, the study would have been a failure.

To all MSc. ITE students, especially Yahya Halim, Bashirudeen Nabie and course rep. Solomon, I acknowledge your contributions and say thank you.

Finally, the Guli-Naa Nubalanaang family, I appreciate your continual support in all my endeavours.

TABLE OF CONTENTS

LIST OF TABLES

TABLE **PAGE**

LIST OF FIGURES

FIGURE **PAGE**

LIST OF ABBREVIATIONS AND ACRONYMS

EMIS	Educational Management Information Systems
ICT	Information and Communication technology
ICT4D	Information and Communication technology for Development
e-Management	Electronic Management
SHS	Senior High School
GIFEC	Ghana Investment Fund for Electronic Communications
UNESCO	United Nations Educational, Scientific, and Cultural Organization
GOG	Government of Ghana
GES	Ghana Education Service
MOE	Ministry of Education
IT	Information Technology
SPSS	Statistical Package for Social Sciences
MIS	Management Information Systems

ABSTRACT

The purpose of this dissertation is to assess the level of ICT integration in the management of SHS. The study focused on the level of access and availability of ICT tools in senior high schools for management purposes. The research also sought to study the views of teachers and school heads on the usefulness of ICT in senior high school management as well as factors that influence its integration. The study adopted the descriptive survey research design that incorporated a mixed method approach. Respondents included teachers, headmasters and students from senior high schools in the Wa municipality who were selected using stratified and purposive sampling technique. Questionnaires were used in the collection of primary data. The study found that ICT was not extensively used in management of the schools. The study further established that senior high schools in Wa Municipality mostly concentrated on using ICT in teaching and learning and not for management purposes. The study concluded that ICT was not highly upheld in Senior High Schools for management purposes and that the headmasters have been sluggish in its implementation causing its integration for management purposes to slow down. The study recommends that the stakeholders in senior high schools should embrace the use of ICT not only in teaching and learning but also for management functions.

CHAPTER ONE

INTRODUCTION

1.1 Background to the Study

Institutional management in recent years have seen an upsurge in technological advancements due to the rapid evolution of these technologies. This has impacted modern management practices of which educational institutions are not left out. Moindi & Sang (2016) asserts that technological evolution has led to a profound progress in the management of tasks and advancement in managerial systems at both individual and institutional levels. The management of every sector including schools have witnessed this revolution initiated by Information and communication Technologies (ICT). According to Roberts and Sikes (2016) as cited in (Oyier, Odundo, Lilian, & Wangui, 2015), ICT has brought about new prospects in education and impacted on the efficient management of schools all over the world.

The use of ICTs has become basic in modern management practices adopted by educational institutions. The use of ICTs for communication, organization, storage, retrieval, manipulation and analysis of data has improved the performance of educational managers in terms of accountability (Miraz, Saleheen, Manzur, Khan, & Rahman, 2016).

According to the Ghana ICT in Education Policy, 2015, the emergence of Information Technology (IT) has been identified as a potential factor for economic growth and social development (MoE, Ghana ICT in Education Policy, 2015). Currently, Information Technology has brought about change in the way people work and also transformed educational systems and institutions across the globe.

Senior high school education as put forward by the Ghana Education Service (GES) is the education children receive after basic school and before tertiary education with the broad goal of preparing individuals for a better living within the society and also for higher education. Senior High Schools in Ghana receive inputs from government and other organizations in the form of human and material resources, processes them and produces the output for consumption by the society.

As a result, the Government of Ghana supports the use of ICTs as a method to reshape the various school management processes, build more efficient frameworks and also establish ties with the community as well as providing learners with requisite skills to learn independently. Senior High Schools have become more complex for headmasters and staff to manage due to an increase in the number of student's enrollment especially with the introduction of Free Senior High School education as well as the introduction of the semester system or better known as the track system by the Government of Ghana.

In the year 2017, the Government of Ghana introduced a policy Dubbed Free Senior High school that saw a 33.2% increase in enrollment (GoG.Budget., 2018). This brought about the adoption of a double-track school calendar system. The other option to accommodate the increasing level of enrollment is the introduction of the shift system. This has made the management of Senior High School to become complex and thus demands more from its managers to achieve their set goals. As a result of this complexity, school administrators are faced with the challenge of managing schools in a meaningful and productive way (Oyedemi, 2015). With the introduction and use of information and communication technologies (ICTs) in the new globalized economy, ICTs in school management is an emergent feature that cannot be ignored because of

its role in enhancing management efficiency. The introduction of ICT in educational management has made it possible for school managers to share knowledge and ideas with teachers, students and parents in a simple and fast way and with ease.

Lipesa (2018) has reported that schools with websites are able to integrate ICT in the management of their daily activities such as co-curricular activities, infrastructural, financial and human resource management. Moindi & Sang (2016) asserted that "ICT enhances day-to-day management of institutions and enables schools to improve in efficiency and cope with rapidly changing world in executing management tasks". Ngugi (2012) in support of this noted that the implementation of a cost effective ICT tools with a flexible learning and administrative activities is key to enhancing secondary school performance.

ICT as a management tool has made school management tasks less complex, which according to Mingaine (2013), help school managers in all aspects of school management such as student registration, processing and outputting students, finance and personnel and other day to activities. However, Dornela, Odongo, & Bosire (2015) observes that many countries in the developing world have limited experience on effective use of Education Management Information Systems (EMIS).

Abdallah (2012) posits that ICT can enhance school management in terms of assisting managers in organizing, planning, implementing, monitoring and evaluation of the school operations. However it has been noted that several senior high schools in Ghana currently have ICT infrastructure but continue with manual system of operations and thus not supporting management of the school.

By using information and communication technology tools, many responsibilities can be operated more effectively and efficiently. Integrating ICTs in senior high schools will be beneficial for teachers, students and administrative managers. It will reduce time, cost and work load (Dipak & Kulkarni, 2012).

1.2 Statement of the Problem

Senior High School education has become more complex due to the increase in the number of student's enrollment especially with the introduction of Free Senior High School education as well as the introduction of the semester system or better known as the track system by the Government of Ghana (MoE, Education Strategic Plan 2018-2030, 2018). Oyedemi (2015) outlined some eminent challenges faced by Senior High Schools in Ghana which include poor communication amongst staff, students and even external governing bodies of the school. This also affects effective planning because most of the processes are still done manually. Others include the mismanagement of financial resources, information on examinations and staff/student records.

For the fact that information technology tools are developing and widely available in the conventional working environment, it is pertinent to identify their level of integration and usefulness in senior high school management in Ghana. Many senior high schools in Ghana introduced computers in great numbers as far back as the early 2000s, however, there is limited data on their use to facilitate school administration and management.

To fill the existing knowledge gap, this study was aimed at examining the extent of the integration of ICT in the management of senior high schools in the Wa Municipality.

1.3 Purpose of the Study

The study intends to examine the extent of ICT integration in the management of Senior High Schools in the Wa Municipality. Specifically, the study sought to:

1. Find out the technology that managers have access to for the management of senior high schools in Wa municipality.
2. Determine how ICTs are been used in the management of senior high schools in Wa Municipality.
3. Determine factors influencing the integration of ICT in the management of senior high schools in Wa Municipality.

1.4 Research Questions

The study was guided by the following research questions.

1. Which technology do the managers have access to in management of senior high schools in Wa municipality?
2. How are ICTs been used in the management of senior high schools in the Wa Municipality?
3. What factors influence the integration of ICTs for the management of senior high schools in the Wa Municipality?

1.5 Significance of the Study

Since the integration of ICTs in education in Ghana, not much has been done to ascertain the level of integration of ICT tools in the management of Senior High Schools. The focus is usually on the access to and use of ICTs for teaching and learning purposes. This research will contribute to the discourse on educational technology by examining the extent of ICT integration in the management of Senior High Schools. It

is hoped that the curiosity to scholars and researchers would be aroused to embark on conducting further research on the application of ICTs for management and administration of schools an area that had been previously given only a little consideration.

The results and findings from this study would be of benefit to policy makers and education stakeholders. The measures on improving the application of ICT is hoped to form grounds for these policymakers to come up with ICT policy design and implementation strategies that can be used in the administration and management of schools. Application of ICT in the administration and management of senior high schools can bring about a renewed vigor in terms of enhancing decision-making processes, communication process and ultimately the overall performance of schools. Also, by highlighting on the areas of ICT use for the management practices of schools, the management will get to know where ICT can be applied to improve the management of schools.

1.6 Limitations of the Study

The study was limited by the fact that it was not feasible to acquire the opinion of all the stake holders in education due to inadequate resources and other logistics. This resulted in the sampling of the required population. Also, the results and findings of this study cannot be generalized since the study was limited to only Wa Municipality even though there are many senior high schools in the Upper West Region of Ghana. Due to the large population, financial constraints and the required period of time, it was not possible to cover all the SHS in the Upper West Region to make a conclusive report.

Getting school headmasters as respondents to questionnaires was a challenge due to their busy schedules. As a result, appointments had to be made in consonance with their schedules. However, getting access to teachers and students was less demanding.

1.7 Delimitation of the Study

Even though there are many senior high schools in the Upper West Region of Ghana, the study was confined to senior high schools in Wa Municipality of the Upper West Region of Ghana. The study was delimited to examining the extent of integration of ICTs in the management of senior high schools in the Wa Municipality since Wa municipal has a better access to information communication technology tools as well as stable electricity.

1.8 Organization of the Study

This study is structured into five chapters. Chapter one is made up of the topic introduction, the statement of the problem, purpose of the study as well as the study objectives and research questions to be tended to by the dissertation. It also sets out the significance of the study, limitations, delimitations and the general layout of the research.

Chapter two outlines the literature review in the area of the concepts and components of ICT used for educational management, ICT application, availability and access, extent of use and factors that influence its integration in School management. The review is geared towards justifying the defined objectives of the research and establishing the premise for the research work.

Chapter three comprises a summary of the research methodology and philosophy by choosing the appropriate research design, population, sample size and sampling

procedures, research instruments, validity and reliability of the research instruments, data collection methods as well as data analysis procedures, and ethical consideration.

Chapter four is made up of the study findings and the analysis of the results. The findings shall be made in prose and references made to tables and figures (graphs, charts and diagrams). This chapter also entails the discussion of the findings. Significant and new findings shall be identified, interpreted and discussed. The discussion shall highlight the major findings of the research and the inferences made from them.

Chapter five came as the last chapter and presented the summary of the study, conclusion, and recommendations on any limitations of the study as well as a suggestion for further study. It also made remarks on the future learning and expectations of the researcher.

1.9 Definitions of Terms

Access: the means or opportunity to approach or enter a place.

Communication: the imparting or exchanging of information by speaking, writing, or using some other medium.

Education: is an experience that has a formative effect on the mind, character or physical ability of an individual.

ICTs: Information and communications technologies (ICT) refers to all the technologies used to handle telecommunications, broadcast media, intelligent building management systems, audiovisual processing, and transmission systems, and network-based control and monitoring functions.

Management – Is an act, manner, or practice of managing, handling, supervision, or control of a business or institution. In this study, the term management and institutional management was used interchangeably, where institutions refer to the schools.

School Managers: In this context, school managers refer to headmasters and Teachers who are heads of departments that run schools.

Senior High School: Senior high school is a secondary school that students attend in the three or four highest grades before college.

Technology: Technology in this study is used to refer to the scientific knowledge and tools which enable schools to run smoothly. Advanced computer technology aids in school management by making school functions like admission, recording, appraisal and timetabling efficiently conducted.

CHAPTER TWO

LITERATURE REVIEW

2.1 Overview

This study intends to examine the extent of ICTs integration in the management of Senior High Schools in the Wa Municipality. This chapter focuses on a cross-reference of elements with comparable surveys, works, reviews and remarks from well-known sources and authorities that include local, regional, international, current sources.

2.2 Conceptual Framework of the Study

The conceptual framework on which the project literature review was made includes the following:

2.2.1 Components of ICT used in Educational Administration and Management.

The components of ICT include data, information, users, software, hardware, and procedures. Singh & Masuku (2014) defines data as raw materials of an ICT system that is needed to be processed in order to produce an output in a meaningful form called information. Users play a crucial role in the use of ICT. According to Singh & Masuku (2014), users input data into the computer system and makes judgement and decisions from output displayed. The physical components of that make up the ICT system is referred to as the hardware. These may include input devices such as keyboard, mouse, scanners, etc., storage devices such as hard disks, pen drives, etc., and output devices such as monitors and printers. Software is a general term that describes computer programs. This in a nutshell shows that, hardware relates to computer systems while software relates programs with a step-by-step instructions for get tasks done. Finally, procedures are the key drivers of what needs to be accomplished and at what time frame.

Biegon T. C. (2019) also noted that administrative procedure which is fraught with problems is dealt with using an ICT system.

A number of ICT application tools have been widely used in the management and administration of educational institutions. According to Kawade (2012), ICT applications that are available for the management and administration of education include internet, websites, software and hardware's such as printers, scanners , photocopiers, and computers. A comprehensive information the most used ICT tools in educational management are as follows.

2.2.1 Internet -based and Web-based Tools

Over the last two decades, resources for the use of the Internet and ICT have been applied to the area of education around the world. This is linked to the potential of the Internet to provide resources for advanced teaching and learning process. Efficient and innovative approaches to learning have the capability of preparing students as professional workforce for the future. The internet have become very popular in developing countries. There is a great deal of evidence on the use of the internet in educational administration as well as in teaching. Currently, teachers in most schools have encouraged their students to communicate with them personally either through email, google classroom, or social networks such as Facebook, Twitter and WhatsApp. In addition, the Internet has also been used to upload and receive student assignments. Literature shows the confidence that teachers have in relation to the Internet as it offers access to useful online resources of data and information that can be of use to both groups of students and teachers (Afshari, Ghavifekr, Siraj, & Samad, 2012). Also, internet-based communication and management of resources can directly and indirectly boost the efficiency of the organization (Afshari, Ghavifekr, Siraj, & Samad, 2012).

In addition, Internet-based tools have also provided broad opportunities for school management to utilize their resources. The Web is the most influential facilitator for a smarter, faster and cheaper way of managing and controlling day-to-day activities such as processing information, transfer of information, storing and retrieval of information (Kazi, 2012). School administrators should therefore pay more attention to providing access to knowledge and information on the Internet-based education system to all academic and non-academic staff.

2.2.2 Hardware Applications

Computers and other information technology and communication hardware develop every year. New tools and equipment developed introduce new prospects, particularly in educational management and administration, hence make the management process more efficient, faster and cheaper. In the light of this, it is evident to see ICT application devices that have been installed in schools for administration and management, such as computers, photocopiers, TVs, radios, scanners, laptops and overhead projectors (Beauchamp, 2017). Devices such as computers have been used to store different documents for teachers, students and other workers of the administration.

2.2.3 Software Applications

Administrators and managers of educational institutions nowadays have adopted to the use specific software applications for their administrative task. According to Beauchamp (2017), programs such as Microsoft Office (Word, Excel, and PowerPoint) and Tally were the most frequently used applications for school administration and management. Oluoch (2016) points out that, administrators are conversant with the use of information-based software, particularly spreadsheets and databases. While this can

be time-consuming, databases have the ability to provide far more reliable and productive ways to handle the information that schools currently use.

Currently, there are a lot more software adopted and used by school administrators for management purposes. The most common software application used in schools is the EMIS. EMIS, is a subsystem of an education system that aims at collecting, processing, analyzing, storing and disseminating information (Oluoch, 2016).

2.2.2 ICT Access and Availability in Schools

The availability of ICT tools plays a crucial role in its integration in educational institutions. Ayere & Agak (2010) points out that the establishment of ICT centers of excellence by NEPAD e-schools project was done to promote the integration of ICT in schools. The results showed that e-learning provides both teaching and learning a better result. It was also found that there were differences in the use of ICT in teaching some subjects.

The availability of Information communication technology devices in classrooms and school offices helps in a successful adoption of technology for teaching and management. Similarly, Basri (2018) assert that managers and teachers who are aware of ICT system technology and have the opportunity to access it performs much better than those with no access at all. According to the United Nations development strategy beyond 2015, there are different types of technologies presently used in schools mostly in Europe and the United States of America (UnitedNations, 2012).These technologies are not common in the management of schools in Africa. The technologies may include computers in the classroom, online media, class website, wireless classroom microphones, class blogs and mobile devices, interactive whiteboards, online study tools and digital video-on-demand, United Nations (2012).

Likewise, United Nations (2012) maintain that the use of ICT in educational management has been a prime concern in most European countries since the millennium. However, its progress has not been equal. There are considerable disparities of e-management within and between countries, and between schools within countries. United Nations (2012) has put forward that a small percentage of schools in some countries have embedded ICT into their administration. The UN also stated that educational institutions in developing countries are now adopting ICT for administration, teaching and learning purposes. This is influenced by an uncoordinated provision and use in the enhancement of administration and development of e-learning, but there has not been profound improvements in management. Such progress has been achieved at a considerable cost. It is observed that different from other countries, countries under European Union have capitalized in ICT in school management: apparatus, professional development, school administration and digital learning content. This has improved access to ICT and its integration in learning.

According to Tella (2011), computer proficiency was measured by the amount of access and possession to computers. A study carried out to investigate the availability and use of ICT in South-Western Nigeria confirmed that instructors with computers distillate on refining the superiority of current practice, through preparation and student testing. This was highly dependent on the extent to which the computer systems were free from other users. Free accessibility was, therefore, as a result of family or personal ownership of computers. Similarly, a research done by Akhtar (2008) on the provision of educational technology at secondary level in North West Frontier Provision, Pakistan, revealed the following findings from a sample of 600 secondary school teachers; that majority of the teachers were not using audio cassettes in teaching and learning process, as a medium of instruction. Further, the study realized that most of the schools were

deprived from computer technology. Thus, teachers did not use projectors during teaching and learning even when the infrastructure was available in the school. These results brings about the effect of access to ICT in its integration in learning. It should be noted that there are school administrators and teachers who have access to ICT but do not integrate it in their duties or instruction. Undoubtedly, access to ICT still remains an impediment in the integration of ICT in education.

Seidu (2015) in his recommendations lauded the provision of ICT tools such as TV sets and computers to all schools. The study also recommended that teachers should make use of audiocassettes, computers, video cassettes and overhead projectors for their teaching learning process. This brings to fore the essence for ICT access and utilization as critical aspects of ICT integration in school management. According to Mumtaz (2000), inadequate ICT resources within the school setup are a great hindrance to the integration of technology. For example, the absence of computer equipment and their related software in classrooms can seriously hinder teachers' use of technology. Resta & Laferriere (2008) in their study, "Issues and challenges related to digital equity", intimates that computers are available for only a small percentage of the African population and that about 4% of them has access to the internet.

It is observed that lack of ready access to technologies by teachers is a key barrier to technology integration in most developing countries such as Ghana (Agyei, 2013). Other researchers such as Obradovic (2016) have also identified resources as an important component in the implementation process of technology innovation. In this study, adequate resources refer to the amount of ICT resources presently available and accessible to the teachers and administrators to successfully use to man in their daily routine.

Notwithstanding, the challenges encountered by the availability and access to ICTs in senior high schools, most schools in Ghana now have ICT integrated their respective jurisdiction. However, there still are some schools in rural and deprived communities and even in some urban communities that are yet to benefit from the Ministry of Education's ICT integration policy as part of their school's curriculum (Broni, 2018). The emergence of information and communication technologies has brought about collaboration among school managers, teachers and students in senior high schools which has led to contribution to knowledge acquisition and information dissemination. This forms basis for the objective on the access and availability of ICT in senior schools which are recipients of the budgetary allocation from GIFEC as opposed to their private counterparts. This study sought to establish the ICT components that have been integrated for use in schools by the students, teachers and school managers since it forms basis for the extent of use.

2.2.3 ICT Integration in Educational Management

The integration of ICT applications in educational institutions has been used for a variety of management purposes. It is used to achieve quality education via effective teaching and learning processes, as well as, for administrative purpose of managing staff and students (Ghavifekr, Kunjappan, Ramasamy, & Anthony, 2013).

Currently, computer software applications have been used in education to support a continuous development in its management and administration. According to Christiana (2019), ICT applications, such as word processing, spreadsheets, running a database, creating a presentation or e-mail program executes useful tasks for education. Three major administration groups in the senior high school integrate ICT in different task areas when performing their daily administration and management duties at school.

They are; the headmaster, Head of department of senior high schools who are teachers and administrative staff such as the school bursar and secretary.

Afshari, Ghavifekr, Siraj, & Samad (2012) posits that the school headmaster as an administration head, should have basic ICT skills for use in carrying out daily administrative and management activities in the school. Headmasters of senior high schools function as role models when applying computer technology in administrative and managerial duties. Singh & Muniandi (2012) adds that, as an instructional leader, headmaster are suppose facilitate teacher's integration of ICT tools in teaching and learning. As a transformational leader, the headmaster should facilitate conditions and events such as creativity and open-mindedness that create a conducive environment for technology adoption (Afshari, Ghavifekr, Siraj, & Samad, 2012).

Chen (2012) indicates that, while school administrators use software based tools such as PowerPoint presentation to give instructions and delivering in-service training in an interesting way, teachers' attitudes are much more aligned towards instruction in this form. Mwalongo (2011) in his research 'Teachers' Perceptions about ICT for Teaching, Professional Development, Administration and Personal use.' has found that administrators use ICT applications, and tools to give announcements to students, write reports and letters for meeting with parent teacher association, student registration, and teachers and staff employment processes. In addition, an effective and efficient integration of ICT applications by school administrators helps in making decisions, information storage as well as making using of online applications to ease their work (Afzaal, 2012).

Usually, in schools administrative heads as instructional leaders determine the success or otherwise of teachers skills in instructional technology, (Webb, 2011). These heads play a crucial role in the integration of technology into the classroom through the teachers. Afzaal (2012) noted that, headmasters of senior high schools play major roles in providing a good learning environment and should also make it possible for the adoption of technology by teachers to make a difference in the execution of their duties. Teachers who plays administrative functions are teachers who in addition to their teaching duties also play administrative roles in the school such as Heads of Departments, Senior House Master and so on. Lin et al., (2011) asserts that these teachers who are part of the administration are the directors and heads of the various departments in the school. In Ghana, administrative staff or teachers is grouped into three. They are the academic department, student's affairs department and extra curricula department. The heads of academic department are burdened with the handling of the overall student's records. Teachers under this head of department have to maintain all records regarding the students by keeping in them unique format. Such computer based files should contains cumulative records of pupils, formative evaluation and summative evaluation which can be print out from the software application as a hardcopy documentation. Mwalongo (2011) however explains that the most commonly reported use of ICT tools in schools is lesson notes preparation, as a teaching and learning material and for examination purposes.

The outcome of related studies indicate that ICT based software can be used by these heads of departments to prepare lesson notes, instructional timetable, academic action plan, weekly forecast and school reports for various purposes (Mwalongo, 2011). Assignments and online tests can be set up and graded automatically, this can save a lot of time for marking and corrections. Results can also be generated using ICT

applications. Seidu (2015) indicates that, computer application programs are used to develop websites and students online portals to help them access online tests and assignments.

Senior High School bursars and secretaries can use also use for executing their day-to-day activities easier, faster and accurately. These administrative staff uses a variety of such tools to manage keep records, do financial work, process documents, maintain communication and collect data.

By integrating ICT in senior high school management process, such duties can be handled more effectively and efficiently. On top of that, administrative staff of various educational institutions are supported by the integration of ICT applications especially in keeping financial records as well as students' evaluation records for future reference (Abadiano, 2018).

A lot of ICT tools have been widely used in educational administration and management in recent years. According to Kazi (2012), administrative ICT applications available for educational management purposes include the internet, websites, software and hardware such as printers, scanners, photocopy machines, and computers. ICT tools that has been widely used in educational management are described in detail as follows: The Internet and ICT equipment and software have seen a marginal increment in the area of education over the past decades. This is as a result of the internet's ability to provide opportunities for the introduction of advanced teaching-learning methods. These modern teaching techniques are capable of preparing students for the future as qualified workforce.

In Ghana today, the internet is popular with many senior high schools. There is evidence of Literatures showing the trust born by teachers that the internet provides access to valuable online resources of data and tools that can be useful for both groups of students and teachers (Afshari, Ghavifekr, Siraj, & Samad, 2012).

Ghavifekr, Kunjappan, Ramasamy, & Anthony (2013) indicates that, web based tools used for communication and management will improves an institutions performance. Besides, web based tools have also deployed a wide range of opportunities for the management of school to maximize and improve their resources. The Internet is the most powerful tool for better, cheaper and quicker management of day-to-day functions such as information processing, transfer, data storage and data retrieval (sushmita, 2007). Therefore, administrators should motivate all academic and nonacademic staff of schools to upgrade their knowledge in the areas of accessing information using the web based educational software and tools.

Information and communication Technologies evolve every passing year. New equipment and machines are developed that create opportunities especially in school administration that makes management effective and efficient. In this situation, it is evident that school administrations have been equipped some common ICT application tools such as computers, multimedia projectors, photocopy machines and laptops (Beauchamp, 2017). This has resulted in additional use of computers in school management as they were predominantly used for storing of various documents in the administration for teachers, pupils and other staffs.

Different software tools have been used by senior high school administrators and managers in the performance of their daily administrative and managerial activities. According to Kawade (2012), the commonly used software by school administrators for management purposes was Office tools such as Microsoft Office suit (Word, Excel, and PowerPoint).

2.2.4 Extent of ICT use in the Management of Schools

Ismail (2010) supports that the rapid evolution of ICT in the last decade has impacted society substantially as a whole. According to European Commission (2005) cited in Ngugi (2012) posits that the main purpose of using ICT in education are management, teaching and learning processes. Ismail (2010) explains that, the external force to integrate ICT in administrative courses has forced schools to capitalize in resources for setup and training. In addition, Ismail (2010) stipulates that instructors have found that technology can be used in teaching, but have deficiency of knowledge on how to use it effectively from a didactic view. Cakir (2012) adds that school managers have considered it a herculean task in integrating technology for an effective and efficient school management.

Teachers use ICTs in three main areas. These areas are subject content studies, education and tutoring/instruction studies and supervised teaching practice (Offevenger, Van der Akker, & Fater, 2007). It is evident that the three areas are crucial components for effective and efficient education programmes. It must be observed, however, that a balance between the three fields is paramount (Offevenger, Van der Akker, & Fater, 2007). Leask & Pachler (2013) indicates that school managers that implement measures that promote learning and ICT capability are more successful. At this point, Leask & Pachler (2013) maintain that ICTs should be treated as a tool for

teaching, learning, and management. This was supported by articulating ICTs in school vision and mission and ensuring available support in the use of ICT. According to Twining (2001) the integration of ICTs calls for a revision of existing ICT activities, developing new opportunities for ICT use, exploring new technologies and advancement of teachers' new and existing skills.

Demir (2006) adds that using ICT in education should not be taken for using it as a tool to transfer instructional material and rehearsal but as a medium for learning, discovering, sharing and creating knowledge. Similarly, Kukali (2013) clarifies that, school headmasters adopt the integration of ICT in their management tasks to help them to keep up with the modern and evolving technologies in their decision making process and problem-solving based on the best management practices. Behind this, Rodríguez (2010) points out that Teachers should be involved in implementing ICT use in school management since they are the principal actors in the sector (Rodríguez, 2010).

Research survey results of ICT in English schools recorded in England National Statistics carried out in 2011 was compared to similar surveys conducted in 2001, 2008, 2009 and 2010. The findings revealed that there is a sturdy intensification on the number of computers per schools between 2008 and 2010 with the highest recorded in 2011. Likewise, internet usage and external electronic communication services, teacher confidence on ICT use and expenditure on ICT steadily increased too (England.Nationa.Statistics, 2011).

This study sought to examine the extent to which ICT is integrated in school management. The study examined the various uses of ICT in school management and the frequency of use of ICT. Specific emphasis was made on establishing whether there

are managerial activities that are fully dependent on ICT. The implication of this would show high levels of integration of ICT use in school management by school managers.

2.2.5 Influence of ICT Integration in School Management

Since the realization of the information age, there has been an intense swing in most of the archetypes on which outmoded erudition subsists (Harvey-Woodall, 2009). This makes it a requirement for school managers to rethink their already existing educational patterns. In addition, Harvey-Woodall (2009) states that students should endeavour to accept, adopt and thrive on the transition that is influenced by technological evolution. There must therefore be a swing in production of standards putting in place the contemporary technology.

Valdez 2005 as cited in Biegon (2017) also emphasized that the use of technology in education is a means to help teachers understand individual learning styles of the children they teach. This is premised on the argument that learning is a life-long process. Technology is going to play a vital role in encouraging all stakeholders to be knowledgeable about the latest trends both in teaching and management.

Philips and Sianjina (2013) explain that technology used in schools should aim at improving and achieving the educational objectives and improve the learning process in the schools. This therefore, can be done by forming committees in charge of planning to partake the due process. Philips & Sianjina (2013) noted that planning committee should have an acquaintance base, and get the support from the teachers and other members of staff.

According to Pi-Sui and Priya (2008), there are 5 motives for use of technology in educational sector that includes; unique instructional explanations, enthusiasm, increasing teacher productivity, crucial IT skills and sustenance for new teaching techniques. Mwalongo (2011) adds that the benefits that form the basis for ICT integration that has been found to uphold learning in education include problem-solving, syllabus variation and student-centred intellect. Ngugi (2012) also argues that the use of ICTs in schools would help reduce the challenge of qualified teachers which is estimated at 25% in Sub-Saharan Africa by accelerating teacher training. It also helps in enhancing learning achievement, reduce school drop-out rates while creating opportunities in remote areas. ICT makes learning interesting thus motivating students to learn and help reduce school drop-out rates. Use of ICT in schools also helps in opening up remote areas which lack ICT infrastructure thus creating opportunities for distance learning/e-learning.

In Africa, many organizations have been undertaking the mystery of low ICT integration in school management. The Association of African University (2000) surveyed the difficult and main hitches affecting the use of ICT in African universities, and thus defined the problems to be technical, non-technical, human and organizational and financial. Technical hitches acknowledged include the poor infrastructure, absence of national information communication infrastructure, lack of university coherent plan for ICT, problems of connectivity, lack of or limited bandwidth for ICT for learning, teaching, management and research, non-reliability of public electricity supply, thus necessitating extra cost for standby generators (Association of African University, 2000).

A study conducted on the challenges of using ICT in school administration in Nandi district in Kenya by Menjo and Boit (2015) revealed that ICT as an administrative tool in secondary schools was not been used effectively to address administrative issues. It was used mainly for clerical work and to a lesser extent on a few other management and administrative duties, particularly in the processing of examinations. Their study found that the major challenges faced by the schools which have contributed to the limited use of ICT in school administration included lack of adequate training on ICT use for teachers and administrators, limited computer hardware dedicated to administrative work, lack of time and absence of appropriate administrative software. Moreover, (UNESCO, 2011) argues that despite continuous training efforts to increase the number of ICT qualified teachers, high turnover remains a challenge. It is noted that whereas training of teachers is meant to equip them with skills to work in the education sector, most of the trained teachers move to other sectors which offer better remuneration. UNESCO (2011) points out that the use of ICT for teaching and learning purposes in schools though still very low is often curtailed by the lack of qualified ICT teachers.

One of the objectives of this study was to determine the factors that influence ICT integration in school management. This is especially important due to the quest by the government to integrate ICT in the education system. This is mainly due to the efficiency benefit accrued from the ICT use. In this regard, establishing the key determinants and hindrances to ICT access led to promoting the boosters while minimizing the determinants. This is one of the benefits the different stakeholders will derive from this study.

In order to fully benefit from the current information era, everyone should be equipped with knowledge and skills related to ICT. In this regard, capacity building and ICT literacy are essential to be considered by the authorities especially in education field. School administration and management should consider the fact that application of ICT in education can contribute to achieve universal education worldwide. For that reason, effective strategic planning for use of ICT application for administration and management that facilitate opportunities for all students, teachers and staff is essential. The study concluded that ICT was not highly upheld in senior high school administrative management who are sluggish in implementing its use for management duties.

2.3 Theoretical Framework

The Diffusion of Innovations theory (Rogers, 2003) formed the grounds of the theoretical framework of the study. According to Rogers (2003) diffusion place a center stage on the factors the either increase or decrease the probability that members of a unit or group will adopt to a new practice, idea or product. Rogers (2003) asserts that, the attitude of individuals approach to new technology is a critical element in its diffusion. Diffusion of innovation framework is particularly suited for this study as Rogers uses the term innovation and technology interchangeably. According to Malcolm and Godwyll (2008), Roger's Innovation Decision Process theory occurs over time through five stages that include knowledge, persuasion, decision, implementation and confirmation. Accordingly, "the innovation-decision process is the process through which an individual or other decision-making unit passes from first knowledge of an innovation to forming an attitude toward the innovation and then to a decision to adopt or reject it" (Malcolm & Godwyll, 2008). It the proceeds to implementation of the new idea, and then finally to confirmation of the decision.

Owing to the complexity of computers and their associated technologies, research on technology diffusion in education have mostly concentrated on the first three phases of the innovation decision-making process. In developing countries, where technology is gradually introduced into the educational system, the status of computers is precarious. Various research work is focused mainly on two stages, i.e. knowledge of innovation and attitudes towards it. Diffusion of innovation predicts that perception and judgement are influenced by media and interpersonal interactions. Taking a closer look at how innovation occurs, Rogers (2003) posed that there are four stages: invention, diffusion, time and consequences.

Information flows through networks from which the roles of opinion leaders as well as the nature of the network determine whether the innovation will be adopted or not. Innovation diffusion research tries to examine explain the factors that affect how and why users adopt to new information media, such as the Internet. According to Buabeng-Andoh (2015), in as much as opinion leaders influence the behavior of the group through their personal contact, other intermediaries classified as gatekeepers and change agents also have an impact on the diffusion process. Singhal (2003) maintains that before an idea can be adopted, it should be understandable, available for trial, observable and the results of its usage being visible. Myhre (1998) reports that school administrators and managers initially base their focus on self-interaction with the new devices, and as they gradually become conversant with the technology they start to think about the potential benefits that would result from the use of the mediums for their duties.

In this study, the theory of Diffusion of Innovations explains the extent of adoption of ICT in senior school management by establishing the different uses of ICT tool in performing their administrative and managerial functions. It also touched on the factors that influence the level of acceptance of ICT and its use which is determined by the perceived benefit to be drawn from it.

CHAPTER THREE

RESEARCH METHODOLOGY

3.1 Overview

This chapter describes the research methodology that was used in this study. The chapter presents details of the research method, research design, population, sample and sampling procedures, sample size, description of research instruments, validity and reliability of research instruments, data collection procedures, data analysis techniques and ethical considerations.

3.2 Research Design

The research onion model presented by Saunders, Lewis, & Thornhill (2012) influenced the methodology of this study. This is presented in figure 1. In using the research onion, the approach taken in this research is to go form the outer layer to the inner layer of the onion.

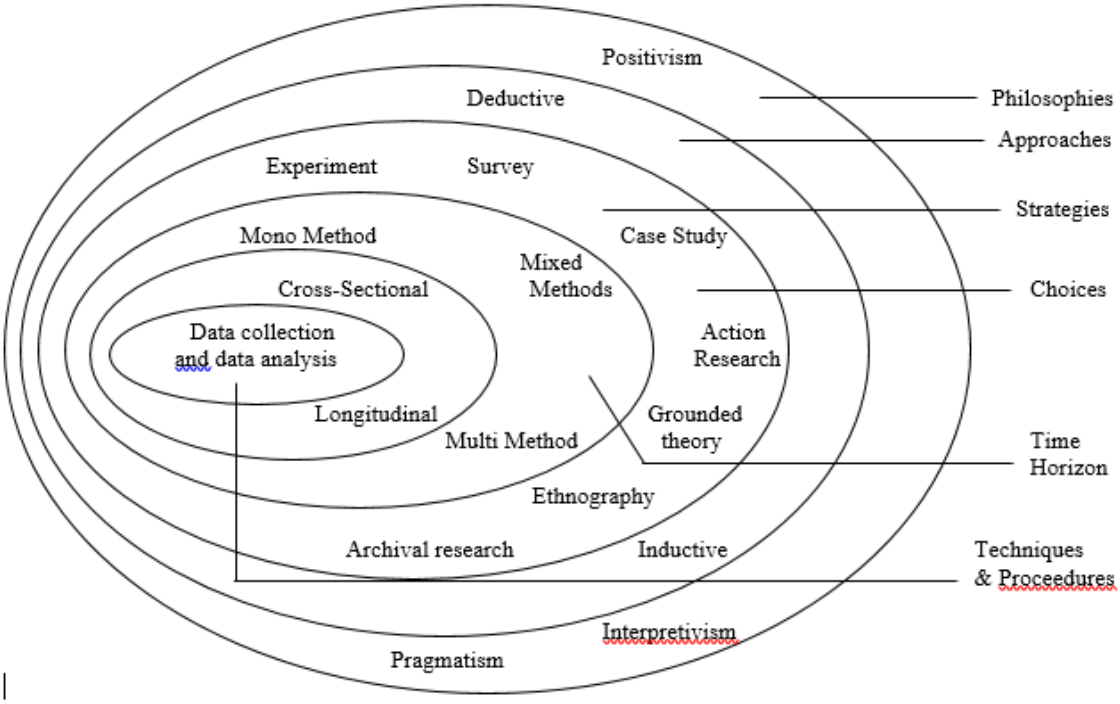

Figure 1: The Research Onion

Source: Research Onion (Saunders, Lewis, & Thornhill, 2012)

3.2.1 Research Philosophy

According to Bryman (2016), a research philosophy refers to the set of beliefs concerning the nature of the reality being investigated. Adopting a research philosophy is determined by the way we view the world and the assumptions we make. The strategy and methods of research is dependent on the assumptions we make. Saunders, Lewis, & Thornhill (2012) asserts that our understanding about knowledge and the process by which this knowledge is developed impacts the philosophy we adopt.

The pragmatist paradigm of research philosophy was adopted for this research work. Settling on the pragmatist research philosophy was based on the rationale that it offers an opportunity to use a mix of different methods in the research thereby yielding better research results. In addition, Alghamdi & Li (2013) believes that, pragmatism does not belong to any philosophical system and reality. Researchers have freedom to choose

the methods, techniques, and procedures that address the research objectives. Alternatively, interpretivism research philosophy or positivism research philosophy could be adopted as they are the major philosophies employed in the conduct of research but they did not fit well with the demands of the research.

3.2.2 Research Approach

According to (Saunders, Lewis, & Thornhill, 2012), in a deductive approach, the previously existing theories are used for presenting the hypothesis related to a specific situation for deriving empirical evidences.

In deductive approach, objectives are developed using a pre-existing theory and then a research approach is formulated to test it (Silverman, 2014). The current study uses a deductive approach so that the main constructs of the study can be verified based on inductively developed constructs (Creswell, 2012). This conforms to the pragmatist research philosophy.

In this study, the deductive approach offers the observations that are required for developing the views on the findings to meet the objectives of the research. This will be done through the conduct of a primary research with the use of a structured questionnaire in order to build the understanding of the observation in addressing the research issues.

3.2.3 Research Strategy

Research strategy is defined as a road map towards the goal of research and how to achieve this goal, to answer research questions (Saunders, Lewis, & Thornhill, 2012). The Survey strategy of the research onion was adopted as it is often associated with the deductive research approach. It is also the most frequently used research strategy for business and management research and therefore tends to be used for exploratory and descriptive research (Saunders, Lewis, & Thornhill, 2012).

Reliable and rich data can be gathered through this method. Surveys involve sampling a representative proportion of the population and is applied in quantitative research projects (Bryman, 2016). The Survey strategy is mostly used to observe contributing variables among different data. It permits the collection of vast data that will be used to answer the research question.

3.2.4 Research Choice

There are three choices in the research onion (Saunders, Lewis, & Thornhill, 2012). They are the Mono, Mixed and Multi method research choice or approach. The mixed method approach was used in this study. This choice conforms to the pragmatist research philosophy and is also consistent with the deductive research approach. In mixed method approach the researcher is permitted to combine both quantitative and qualitative data collection techniques and analysis (Saunders, Lewis, & Thornhill, 2012).

According to Flick (2015), the mixed method combines methods to create a precise data set. The use of qualitative research technique facilitated an in-depth examination of the extent of ICT integration in the management of senior high schools. This approach also facilitated a thorough investigation of the topic under study from the perspective of

school administrators and their responses cross-checked with that of their teachers and students to determine the consistency in the data collected. Quantitative approach on the other hand enabled the use of the t-test to test for statistical significance in the differences in the frequency of ICT usage by headmasters and teachers.

3.2.5 Time Horizon

Time horizon defines the expected period for which the project work will be completed. Within the research onion, two types of time horizons are specified: the cross sectional and the longitudinal (Bryman, 2016). The cross sectional time horizon is the one already established, whereby the data must be collected. This is used when the investigation is concerned with the study of a particular phenomenon at a specific time. A longitudinal time horizon on the other hand refers to the collection of data repeatedly over an extended period, and is used where an important factor for the research is examining change over time (Singh, 2014). Just like most academic research, this research has adopted the cross sectional time horizon. Cross sectional studies are generally concordant to survey strategy.

In this study, the phenomena that is considered for study which is gathered from the research respondents is what is required most and not the changes that occurs over the time. The cross sectional approach also helps to gain an in-depth understanding from the respondents and the choice of data collection technique and sample selection will also be influenced by it. The cross sectional research will be an advantage as it is a study for the present time period and is helpful for getting the current information on the integration of ICT in senior high school management that is evolving each passing day.

3.2.6 Techniques and procedures

The innermost layer of the Research onion represents data collection and data analysis as shown in Figure 1. The researcher at this stage has to make sure that there is no bias in data collection process. In interpretation of data, data is analyzed against the theoretical framework.

3.3 Sample Population

Saunders, Lewis and Thornhill (2012) define sample population as a group of subjects identified from a larger population as a representation of the entire group. According to Creswell (2012) the sampling method adopted helps in identifying safe generalizations that can be deduced from a larger target population.

Population refers to the complete set of individuals (subjects), objects or events having common observable characteristics in which the researcher is interested in studying (Agyedu, Donkor, & Obeng, 2010).

This study targeted respondents in all the ten senior high schools in the Wa municipality from which students, teachers and all the headmasters were included. In the ten schools, all the 10 headmasters, 499 teachers and 7852 students were the targeted respondents. The distribution across the schools are presented in Table 13.

3.4 Sampling Procedure

Sampling is the process of selecting a number of individuals for a study from a larger group in such a way that the individuals makes a representation of the larger group (Mugenda A. G., 2008). Kumar (2010) adds that sampling procedure provides a valid alternative to a census where it is impractical to survey the whole population due to budget constraints, time constraints and since the results of the study are quickly needed by the researcher.

The use of sampling methods in research study makes sure that there are practicable opportunities for recognizing a uniform, representative sub sect of the population. Bryman (2016) identified two primary means for the selection of the research population: probability sampling and non-probability sampling.

Since the study involved a wide population, a census is not appropriate and hence was not used. In non-probability sampling, there is an assumption that there is an even distribution of characteristics within the population. This aroused the researcher to believe that any sample would be a representation of the population since the results generated would be accurate.

This study adopted purposive sampling method and stratified sampling technique. Purposive sampling was used in the selection of the headmasters and subject teachers. This ensured the inclusion of subject teachers and principals in the study.

The study also used stratified sampling in the selection of students. This technique ensured the inclusion of male and female students in the selected schools. Stratified sampling is the approach used to get adequate representation of a sub-sample (Wimmer & Dominick, 2006). Although the population did not have an exact equal number of boys and girls, 2% of students from each school were selected as respondents with equal number of both genders. This would help the researcher to achieve the research objectives.

3.5 Sample Size

Whiles the most conservative research estimate used 50% of the population, Istaiteyeh (2011) points out that it was not possible in this study due to the large number of respondents.

To determine the size of the sample used, the Yamane (1967) formula was used. It states that the desired sample size is a function of the target population and the maximum acceptable margin of error (also known as the sampling error) and it expressed mathematically (Singh & Masuku, 2014).

Therefore:

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

Where:
n =sample size
N = target population
e =maximum acceptable margin of error (5%) or 0.05 for the students and 10% or 0.1for the teachers.

The outcome of the samples were as follows:

Sample size of teachers

$$n = \frac{499}{1 + 49\,(0.1)^2} = \frac{499}{1+499\,(0.01)} = \frac{499}{5} = 99.8 \sim 100$$

Sample size of Students

$$n = \frac{7852}{1 + 7852(0.05)^2} = \frac{7852}{1+ 7852(0.0025)} = \frac{7852}{20.63} = 380.6 \sim 381$$

Data was collected from the ten (10) senior high schools and all the ten (10) headmasters were purposively included as they were key informants to the study. The rest of the sample was selected using simple random sampling technique where each member was given an equal chance to participate.

3.6 Data Collection Instruments

The study sought for empirical and qualitative data collection approaches. Data was collected from the secondary schools using three sets of questionnaires. Orodho (2012) defines a questionnaire as an instrument used to gather data, which allows a measurement for or against a particular viewpoint. He emphasizes that a questionnaire has the ability to collect a large amount of information in a reasonably quick space of time. Chandran (2004) observes that questionnaires enable the person administering them to explain the purpose of the study and to give meaning of the items that may not be clear.

The questionnaires were divided into four sections covering demographic information, access and availability of ICT facilities, usage of ICT as well as factors that influence the integration of ICTs in senior high schools. Both open and close ended questions were used. Close ended questions restricted the respondents to yes or no responses. Matrix questions, contingency questions and behavioral questions were also included. The open ended questions allowed the respondents to give an in depth response to the subject of study.

3.6.1 Validity

Kate, Belinda, Vivienne, & John (2003) indicates that, for a research instrument to be considered valid, the content selected and included in the questionnaire must be relevant to the variable being investigated. In quantitative research validity is the extent to which any measuring instrument measures what it is intended to measure (Thatcher, 2010). To enhance the validity of the research instruments, the researcher had the research instruments assessed by professionals well versed in research and appraised by his

supervisor. Content validity of the research instrument can be enhanced through expert judgment (Best, 2011). The content of the questionnaire were then corrected appropriately according to the supervisor's guidance. In addition to that all thee questionnaires were structured in a simple language to facilitate easy understanding.

3.6.2 Reliability

Reliability refers to a measurement that supplies consistent results with equal values (Blumberg, Cooper, & Schindler, 2005). It measures consistency, precision, repeat-ability, and trustworthiness of a research (Chakrabartty, 2013). It indicates the extent to which it is without bias, and hence insures consistent measurement across time and across the various items in the instruments. In quantitative research, reliability refers to the consistency, stability and repeatability of results, that is, the result of a researcher is considered reliable if consistent results have been obtained in identical situations, but different circumstances.

To test on the reliability of the instruments, the researcher used test re-test method. This method involves administering the instruments to the respondents and after some period of time re-administering the same instruments to see the consistency with which the questions are answered. The researcher administered the instruments to two schools which were used for piloting and after a period of one week, the instruments were administered again in the same schools. The researcher found that there was consistency in the way the instruments were answered by the respondents thus the instruments were considered reliable.

3.7 Data Collection Procedures

The researcher obtained an introductory letter from the Head of Department of ITE Post graduate Studies, University of Education Winneba Kumasi Campus.

The researcher made appointments with respondents of the sampled schools to notify and request for permission to carry out the study in their schools and arrange for the dates for data collection. Furthermore, the researcher during his visit with the respondents explained to them the purpose of the study and sought consent from them before administering the questionnaires.

The researcher administered the instruments to the respondents who were given ample time to respond to the questions. This ensured an achievement of a good return ratio and helped respondents to get a chance to seek clarification on items which proved ambiguous to answer.

3.8 Data Analysis

Data analysis techniques are statistical methods which were used to analyze data so that it could be interpreted. The data collected from the respondent was both quantitative and qualitative in nature. Quantitative data was coded tallied and analyzed using descriptive statistics such as mean, frequency and percentages. The result of data analysis was reported in summary form using frequency tables, bar graphs and pie charts. Qualitative data analysis for the open ended questions was done using content analysis where ideas were grouped into themes. The frequencies of different descriptions were generated by categorizing and coding pieces of data into themes. Statistical Package for Social Sciences version 25.0 (SPSS v. 25.0) was used to analyze the data. The SPSS has the incredible capabilities and flexibilities of analyzing huge data within seconds and generating an unlimited range of simple and sophisticated statistical results.

3.9 Ethical Considerations

Research ethics plays an important part in forming a research design. Research ethics will involves in the planning of research, requesting access to organizations or individuals and while reporting the data as well (Saunders, Lewis, & Thornhill, 2012). The researcher informed participants about what their participation in the research entailed, the requirements of the study and its importance so as to get their consent before proceeding with data collection. Informed consent is central in social research and it is up to the participants to weigh the benefits and risks associated with participating in the research and deciding whether to take part or not (Burgess, 2016). By explaining to the respondents, the purpose of the study, the researcher did not force them to participate in any way but allowed individuals to decide whether or not to participate in the study.

In this study, the confidentiality of the research participants was ensured. This was done by ensuring that the principles governing research participants were followed. Great care was taken to assure respondents that all information was treated with a lot of confidentiality. The researcher informed the respondents that no information was shared to third party. Also, their information was not identified and was used for research purposes only.

Finally, the researcher made sure that there was no plagiarism in the study by acknowledging other people's work. The findings have been reported as per the respondents' answers and not otherwise.

CHAPTER FOUR

RESEARCH FINDINGS AND DISCUSSIONS

4.1 Overview

This chapter displays the findings and outcome of the study on the extent of ICT integration in the management of senior high schools in the Wa Municipality of the Upper West Region of Ghana. This chapter also contains the analysis of data collected through questionnaires. Descriptive statistics were used in the analysis of the data.

4.2 Questionnaire Return Rate

The research targeted 490 respondents (100 teachers, 380 students and 10 headmasters) out of a total target population of 7582 (10 headmasters, 347 teachers and 7225 students) from 10 selected senior high schools in the Wa Municipality. The characteristics of the respondents considered were gender, age level of academic education and the period the respondents have worked for or stayed in the institution.

The researcher issued a total of 490 questionnaires to the selected sample of respondents out of which 405 questionnaires (10 headmasters, 77 teachers and 318 students) were received. Out of the total of 405 respondents who returned their responses, the response rate was 82% of the sample of respondents and the non-response rate was only 18%.

The response rate indicates that the data collected clearly met the requirements basing on Cooper and Schindler's standard sample size of 30% that is generally to conclude the view of the whole area of research (Cooper & Schindler, 2003). Figure 1 represents details of the response rate.

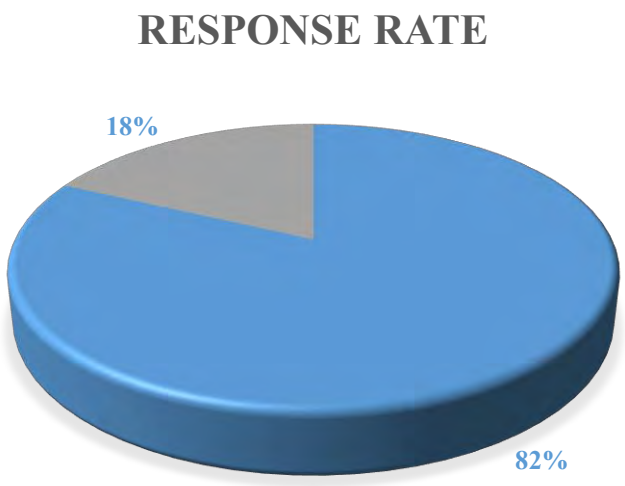

Figure 2: Response Rate

4.3 Reliability Analysis

To determine the degree of data reliability, Cronbach's Alpha analysis was done in order to test for reliability of the gathered data. From the Table 1 below, the collected information is reliable. According to Adeel (2020) a generally accepted rule is that **α** of 0.6-0.7 indicates an acceptable level of reliability, and 0.8 or greater a very good level especially when the test items are less than 10. However, values higher than 0.95 are not necessarily good, since they might be an indication of redundancy.

Table 1: Reliability Analysis

Variables	Cronbach's Alpha Results	No. of items
Level of access and availability of tools	.861	7
Extent of ICT use in school management	.943	10
Factors that influence ICT use	.798	8

4.4 Demographic Information

This sector indicate the class level, gender as well as the age brackets of the respondents. The background of respondents was very necessary to enable the researcher to describe the particular characteristics of the respondents.

4.4.1 Demographic Background Characteristics of Students

The study identified the following; (class level and Gender) as important demographic characteristics of the Students. The results are presented in Tables 2 below.

Table 2: Demographics characteristics of the students

Demographics	Demographics	Frequency	Percentage (%)
Class	SHS1	89	28.0
	SHS2	111	34.9
	SHS3	118	37.1
	Total	318	100.0
Gender	Male	216	68.0
	Female	102	32.0
	Total	318	100.0

Source: Field work, 2019

A cursory look at Table 2 above shows that out of the total of 318 respondents, 216 were males which is represented by 67.9% and the rest, 102 respondents, were females represented by 32.1%. This indicates that, male students dominated the study by 114 respondents. Nonetheless the gender gap have no implication on the responses.

Again, Table 2 shows that there were 118 SHS 3 students represented by 37.1% of the sample size. SHS 2 students were 111 representing 24.9% of the students whereas SHS 1 respondents were 89 which is the same as 28% of the student respondents. The SHS 1 has the least respondents due to the system of double track introduced by the Ministry of Education of which the gold track was at home whilst the green track was in school.

The SHS 3 students were more than the other respondents since they were in school session. Also their knowledge on the questionnaire items is higher due to the many years in the senior high school level.

4.4.2 Demographics Background Characteristics of the Teachers

The study identified the following; (Gender, Age bracket and Level of Education) as important demographic characteristics of the teachers. The results are presented in Tables 3 below.

Table 3: Demographics characteristics of the teachers

Demographics		**Frequency**	**Percentage (%)**
Gender	Male	49	64
	Female	28	36
	Total	77	100
Level of Education	HND	6	8
	Diploma	8	10
	Degree	44	57
	Master	19	25
	Total	77	100
Age	20-25years	13	17
	26-35years	24	31
	26-35years	29	38
	Above 45 year	11	14
	Total	77	100.0

Source: field work, 2019

Table 3 shows that male teachers dominated the study as far as the respondents are concerned. Males were 49 making 64.0% of the total respondents whereas the females were 28 with a 36% representation of the total respondents. Also, the table shows that majority of the teachers of senior high schools were middle aged. Those aged from 20 to 25 years were 17% and those aged from 26 to 35 years were represented by 31% of the total respondents. The teachers whose ages ranged from 36 to 45 years dominated the study as they were represented by 38% of the teacher respondents. The respondents

above 45 years were 14% of the total respondents. This shows that most of the teachers in senior high schools fall in the category of ages from 20 years to 45 years as their cumulative percentage is 86%. Finally, the table indicates that no respondent had attained the PhD level. Teacher responses with master's level of education were 19 representing 25% and those with Bachelor's degree were 44 representing 57% of the respondents. This clearly indicates Bachelor's degree holders dominated in the responses from senior high school teachers. Those with HND level were 6 and those with Diploma level of education were 8 representing 8% and 10% respectively. This signifies that the respondents were qualified to integrate ICT in sampled schools in the Wa Municipality of the Upper West Region of Ghana.

4.4.3 Demographics Background Characteristics of the Headmasters

The study identified Gender as important demographic characteristics of the Headmasters. The results are presented in Tables 4 below.

Table 4: Distribution of Headmasters by Gender

Demographics	Demographics	Frequency	Percentage (%)
Gender	Male	8	80.0
	Female	2	20.0
	Total	10	100
How long have you been headmaster of this school	0 – 3years	2	20
	4 – 8 years	5	50
	9 – 12 years	2	20
	Above 13years	1	10
	Total	10	100

Source: field work, 2019

From Table 4 there are 8 headmasters in the sample, representing 80% being male of the total population. On the other hand, headmistresses were 2 representing 20% of the total population. The gender for the heads of senior high schools was distributed across two different gender schools of which a male was headmaster of the boys'

school and a female heading the girls' schools. And, the distribution of how long have you been headmaster of the school shows that 20% (n = 2) of them have had 0-3 years of been a head teacher of senior high school, 50% (n = 5) have had 4-8 years of been a head teacher of senior high school, 20% (n = 2) have had 9-12 years of been a head teacher of senior high school while 13 and above years (n=1) of them been a head teacher of senior high school. Their experience level show that they have quite magnificent experience since majority of them fall within 4 and above years of constant service.

4.5 Technology Managers have Access to in Senior High Schools

The first objective of the research was to find out the technology that senior high school managers have access to for management purposes in Wa Municipality of Upper West Region. The respondents who are headmasters were asked to indicate the ICT tools that are available in their schools for management purposes. The following represents the responses gathered.

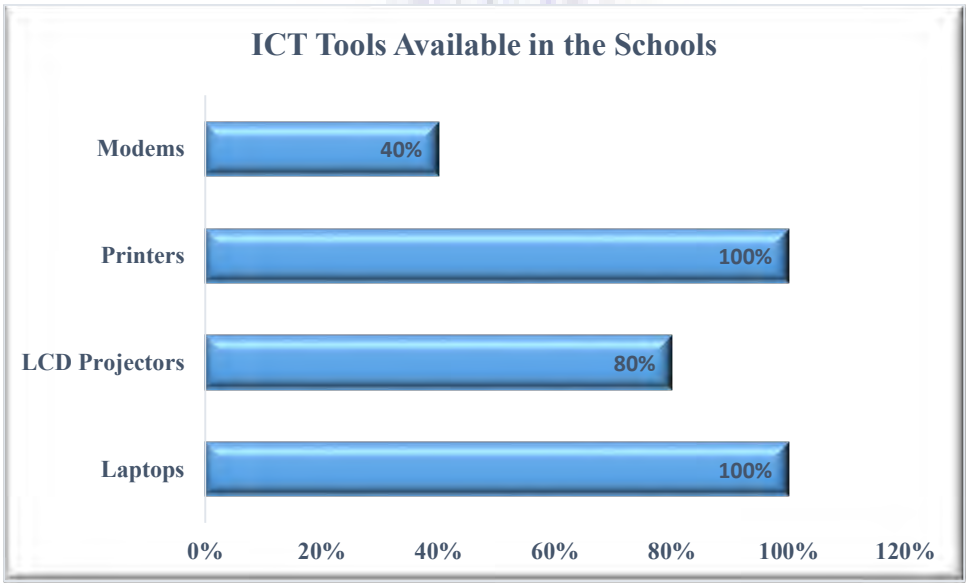

Figure 3: ICT Tools Available in Schools

Figure 3 indicates that senior high schools had most of the essential ICT tools for management purposes. According to the headmasters, all the schools had laptops and printers for management purposes. Eight heads confirmed that their schools had LCD Projectors representing 80% of the headmasters' respondents. Four headmasters further responded that their schools had modems for internet connection for management purposes and is represented by 40% of the study sample.

From the findings, it is evident that most of the schools had the necessary ICT tools to use for management and administration purposes and therefore implementing their use in management will be less difficult. Tella (2011) states that, with all the schools having ICT tools such as computers, keeping and processing of school management data can be easy and safer. Internet is very essential for seeking extra knowledge and doing research on new stuff as well as finding out how things are done in other parts of the world (Akhtar, 2008). The study also found that many of the selected schools had no internet connection. The absence of internet could limit the extent of integration of ICT in the management of senior high schools since the users have limited access to research platforms and information available on the internet.

Table 5: Level of Access to ICT in the Schools

Statement	Agree (A)		Undecided (U)		Disagree(D			
	N	Percent	N	Percent	N	Percent	Total	Percent
I have a computer and other ICT tools like internet used in managing the school	7	70%	0	0%	3	30%	10	100%
The heads of departments are provided with ICT tools for managing the activities of their departments	5	50%	1	10%	4	40%	10	100%
Students have access to computers for checking memos sent to them by the school management	1	10%	2	20%	7	70%	10	100%
All management staff are provided with computers for the school management practices	4	40%	0	0%	6	60%	10	100%

Source: Field work, 2019

To determine the level of access of ICT in the senior high schools, heads were asked to rate some statements in a Likert scale of Agree (A), Undecided (U), and Disagree (D) from table 5 for the positively stated statements.

Table 5 shows that 70% of the sample of the study representing 7 senior high school heads had their personal computers used for the school management purposes. However, 3 heads of the selected schools disagreed that they had personal computers for school management and they represent 30% of the sample of the study. Five (5) headmasters representing 50% of the study responded that they provided the various heads of departments with ICT tools for the management of their departmental activities whereas one (1) of the respondents was undecided and four (4) others disagreed representing 10% and 40% of the study sample respectively.

On students access to computers for checking memos and other communications from the school's management, one headmaster representing 10% of the respondents agreed that their school had that facility. 20% representing two (2) headmaster respondents were undecided with regards to the statement and seven (7) headmasters representing 70% of the study sample disagreed with the statement.

On the provision of computers to the management staff for school management practices, four (4) headmasters representing 40% of the sample agreed to the statement whilst six (6) heads representing 60% of the sample disagreed with it.

The findings presented above is an indication that the schools are not fully aware of the potentials and benefits of having ICT tools and integrating them to enhance school management. Many of the senior high schools have not enabled their students' access to computers in order to view memos and other relevant information from the school. This shows that most of the schools do not include students in the use of ICT tools for management purposes and this affected the effectiveness of the use of ICT tools in the senior high school management as some parties are left out (Baldauf & Stair, 2010).

4.6 Extent of ICT use in the Management of Senior High Schools

The second objective of the study was to find out the extent to which ICT is used in the management of senior high schools in the Wa Municipality. The study aimed at finding out the level to which school managers use ICT tools in running the daily activities of their various schools. Students, teachers and the headmasters were asked to state the frequency of computer use in relation to managerial activities of the school such as sending memos to staff members and students, allocating duties to staff members, keeping students records and carrying out administrative duties. The responses are presented in the following tables.

4.6.1 Students use of ICT

Table 6: Students Extent of ICT use in the Schools

Statement	Often		Rarely		Never			
	N	Percent	N	Percent	N	Percent	Total	Percent
Finding information of the school via the internet	38	12%	83	26%	197	62%	318	100%
Seeking permission from the school management	22	7%	121	38%	175	55%	318	100%
Getting school fees balances from the school accounts office	51	16%	92	29%	207	65%	318	100%
Accessing End of Term results	89	28%	42	13%	188	59%	318	100%
Registering your presence in school by answering the students daily register using digital devices	0	0%	64	20%	254	80%	318	100%

Source: Field work, 2019

Table 6 shows that students were not very much involved in the managerial activities of the school through use of ICT tools. 38 students representing 12% of the sample of respondents (students) said that they often uses ICT tools to find information of their school via internet and 83 students representing 26% of the sample said they rarely used ICT tools to perform same task. More than half of the students' respondents, 62% said they have never used computers or other ICT tools in checking for information of their school on the internet. The findings of the study further shows that 22 students, that is 7% of the student population of used ICT tools in seeking permission from the school management, 121 (38%) rarely uses ICT tools for the same task and 175 students representing 55% of the study respondents indicated that they never used computers in seeking permissions from their school management staff. On the use of computers and other ICT tools to access and get their school fees balances from the school's accounts office, 51 students making 16% of the study sample indicated that they use ICT tools

such as smart phones and mobile phones to access their school fees balances. 92 students representing 29% said they rarely used computers for accessing their school fees balance and 207 (65%) of the student respondents replied that they never used ICT tools to perform such task. The study further revealed that more than half of the student respondent's sample, 188 students making 59%, indicated that they have never used computers to check their End of Term results. 41 students representing 13% said rarely used computers for the same purpose and 89 student respondents representing 28% confirmed they often used computers and smart phones to access their End of Term results from their school. The findings also show that 254 (80%) of the students out of the 318 respondents involved in the study indicated that they have never used computers or other digital devices to answer to daily students register at all whereas 64 (20%) said they rarely used ICT tools in registering their presence in the school or answering to daily students' register.

From the outcome of the findings, it is evident that students are not greatly involved when it comes to the use of ICT in the management of Senior High Schools. Students are very important members of the school society and their involvement in all matters concerning the school including its management is crucial (Offevenger et al., 2007). Offevenger et al (2007) established that inability to involve students in the implementation of activities or projects of the school will result in a minimal success. This clearly explains that in order for senior high schools to integrate the use of ICT tools in their managerial activities, they need to involve students so as to make the program effective from the top level management to the bottom level (Leask & Pacher, 2013). Students ability to access information such as fee balances, results, time tables and the schools plan of action for the term from the school management through computers and other digital forms, then they are likely to be motivated and therefore

put pressure on the management of the school to continue using ICT in performing such managerial and administrative functions (Tmison & Taylor, 2001).

4.6.2 Teachers Use if ICT

Table 7: Teachers Extent of ICT use in the Management of Senior High Schools

Statement	Always		Often		Sometimes		Rarely		Never	
	Freq	%	Freq	%	Freq	%	Freq	%	Freq	%
Raising School matters to headmasters	15	19.5%	12	15.6%	21	27.3%	19	24.7%	10	13.0%
Receiving information's and orders from the heads	15	19.5%	9	11.7%	33	42.9%	15	19.5%	5	6.5%
Monitoring students class attendance	10	13.0%	10	13.0%	10	13.0%	8	10.4%	39	50.6%
Seeking for authorization from the school head	11	14.3%	17	22.1%	27	35.1%	9	11.7%	13	16.9%
Participating in decision making processes	10	13.0%	9	11.7%	19	24.7%	13	16.9%	26	33.8%
Preparing and checking school timetable	30	39.0%	8	10.4%	13	16.9%	8	10.4%	18	23.4%
Making examination entries and generating results	22	28.6%	13	16.9%	8	10.4%	8	10.4%	26	33.8%
Monitoring students' academic records	23	29.9%	12	15.6%	11	14.3%	7	9.1%	24	31.2%
Preparation of students reports forms for parents	26	33.8%	13	16.9%	9	11.7%	5	6.5%	24	31.2%
Preparing scheme of work and lesson plans	16	20.8%	12	15.6%	7	9.1%	9	11.7%	33	42.9%

Source: Field work, 2019

Table 7 shows that 15 (19.5%) of the teacher respondents always use ICT tools such as computer or smart phone in raising school matters to the head. 15(15.6%) of the respondents often use ICT tool for the same function and 21 (27.3%) said they sometimes use it. 19 teachers representing 24.7% indicated that they rarely use either smart phones or computers to communicate school matters to the heads whereas 10 (13%) showed they have never used ICT tools to execute the same task. On receiving information and orders from the school headmaster, 19.5% of the teacher respondents said they always use ICT tools, 11.7% indicated they often use ICT tools, 42.9%

showed they sometimes use it, 19.5% also said they rarely used it whiles 6.5 indicated that they never use ICT tools for this function. The study also revealed that 13% of teacher respondents always used ICT tools to monitor student class attendance and another 13% also said they often used ICT tools for the same function. 13% indicated they sometimes use ICT tools, 10.4% showed they rarely use it and 50.6% said they have never used computers of smart phones in the performance of this task. On using ICT tools to seek authorization from the school headmaster, 14.3% said they always use them and 22.1% affirmed they often do the same. 35.1% of teacher respondents said they sometimes use ICT tools, 11.7% indicated they rarely use them and 16.9% indicated they have never used ICT tools to seek for authorization from their schools head. When the respondents were asked how regular they used ICT tools to participate in decision making process of their schools, 13% of the respondents indicated that they always use ICT tools, 11.7% said they often do likewise, 24.7% also said the sometimes use ICT tools, 16.9% said they rarely use them whiles 33.8% indicated that they have never used ICT tools to helping decision making process of their schools. A cursory look at the responses from teacher respondents indicates that 39% and 10.4% always and often respectively use ICT tools to prepare their school timetable and also check it. 16.9% sometimes use ICT tools for the same purpose and 10.4% said they rarely use them. A total of 18 teachers representing 23.4% of the teacher respondents indicated they have never used ICT tools to check or prepare their schools timetable. When asked if they used ICT tools to make examination entries and generate results, 28.6% said they always do, 16.9% said they often do, 10.4% indicated they sometimes use it, another 10.4% said they rarely use it and 33.8% indicated they have never used ICT tools for this purpose. On monitoring students' academic records, 29.9% agreed they always use ICT tools to execute the task, 15.6% said they often use computers to do so,

14.3% indicated they sometimes use ICT tools, 9.1% of the teacher respondents said they rarely use it whereas 31.2% indicated they never used ICT tools to perform this task. Findings from the study again revealed that 33.8% always use computers to prepare students report forms for parents, 16.9% often used computers for the same purpose, 11.7% indicated they also sometimes use computers, 6.5% said they rarely used them and 31.2% said they never used computers for this function. On the preparation of scheme of work and lesson plans by the teachers, 20.8% of the respondents indicated that they always use ICT tools to perform this duty, 15.6% also confirmed they use computers to execute the same function and 9.1% said they sometimes employ the use of ICT tools for the same purpose. However, 11.7% and 42.9% indicated they rarely and never respectively involved ICT tools such as computers in the performance of these functions.

From the findings, it is evident that most of the teachers of senior high schools do not use ICT tools in the execution of their managerial functions in the school. As posited by Demir (2005), teachers are usually involved in the management of the school by participating in the decision-making process of the school, monitoring the students' class attendance, receiving orders from the school managers and monitoring of school records. Through the integration of ICT tools in the management of schools, teachers will be able to get involved in the management process of their schools and preserve time for their periods (Kukali, 2013).

The findings also show that few teachers use ICT tools in the performance of their managerial duties and this is in consonance with results of Ismail (2010) who found that although most often teachers ignore their managerial duties they were the people

required to embrace the use of ICT in the management of their schools as much as the necessary ICT tools are provided and are available.

4.6.3 Headmasters USE of ICT

Headmaster respondents were given multiple uses of ICT tools in the management of senior high schools to rates using a 5 point Likert scale; 1 –Never, 2 – Rarely, 3 – Sometimes, 4 – Often, 5 – Always. The data collected was analyzed in means and standard deviations. The means were interpreted in 5 – point scale as follows;

(<1) – Never, (>= 1.0 to 1.9) – Rarely, (>= 2.0 to 2.9) – Sometimes, (>= 3.0 to 3.9) – Often and (>= 4.0 to 4.9) – Always.

Table 8: Applications of ICT Tools used in the Management of Senior High Schools.

Statements	Never		Rarely		Sometimes		Often		Always			
	Freq	%	Freq	%	Freq	%	Freq	%	Freq	%	Mean	SD
Validating of staff monthly emoluments	0	0.0%	1	10.0%	1	10.0%	1	10.0%	7	70.0%	4.4	1.075
Preparation of school budget	1	10.0%	1	10.0%	0	0.0%	3	30.0%	5	50.0%	4	1.414
Keeping and monitoring School records	0	0.0%	0	0.0%	4	40.0%	4	40.0%	2	20.0%	3.8	0.789
General Management Activities	0	0.0%	1	10.0%	2	20.0%	7	70.0%	0	0.0%	3.6	0.699
Communicating to students and staff	1	10.0%	2	20.0%	4	40.0%	3	30.0%	0	0.0%	2.9	0.994
Keeping teachers performance and appraisal records	3	30.0%	0	0.0%	3	30.0%	3	30.0%	1	10.0%	2.9	1.449
Assigning duties to staff	3	30.0%	0	0.0%	4	40.0%	2	20.0%	1	10.0%	2.8	1.398
Maintaining teachers attendance records	3	30.0%	0	0.0%	4	40.0%	2	20.0%	1	10.0%	2.8	1.398
Monitoring staff performance	3	30.0%	1	10.0%	3	30.0%	3	30.0%	0	0.0%	2.6	1.265
Communicating with parents	2	20.0%	3	30.0%	3	30.0%	2	20.0%	0	0.0%	2.5	1.08

Source: Field work, 2019

Table 8 outlines the various applications of ICT tools used in the management of senior high schools. The results from the headmaster respondents indicates that majority of the senior high school heads use ICT tools (computers) for validation of staff emoluments at an average rating of 4.40 (Always) with standard deviation of 1.075 and also for the preparation of their school budgets at average 4.00 (Always) with standard deviation of 1.44. This is followed by the keeping and monitoring of school records at 3.8 (Often) and general management activities at average rating of 3.6 (Often). The standard deviations are 0.789 and 0. 699 respectively. The rest of them are communicating with students and staff at average rating of 2.90 (Rarely) and standard deviation of 0.994, Keeping teachers performance and appraisal records at average rating of 2.90 (Rarely) and standard deviation of 1.449, Assigning duties to staff and maintaining teachers attendance records at average ratings of 2.8 (Rarely) with a standard deviation of 1.398, Monitoring staff performance at average ratings of 2.60 (Rarely) and finally Communicating with parents at average ratings of 2.5 (Rarely).

The high average mean shows that majority of Senior High Schools in the Wa Municipality have already adopted the use of ICT tools (computers) in performing some management functions in the school such as validating staff monthly emoluments, preparing the school budget and keeping school record.. These findings concurs with those of Kukali (2013) who established that heads of schools use ICT frequently in performing their managerial duties in the schools as they desire to have accurate and quick access to information and database and also want a fast way to communicate with the school community. Rodrigues (2010), explains that through the use of computers and other ICT facilities in the management of schools, heads are able to put together the various managerial activities and this makes it easier for them to handle all relevant tasks at a go.

The findings also show that most of the headmasters do not use ICT in monitoring the performance of the staff. Tmison et al (2001) found that effectiveness in working of the staff especially the teachers was enhanced when monitoring was carried out by school management. This according to Ngugi (2012) can be done by use of technology whereby the teachers' performance is rated and awarded marks. Through this the headmasters can identify the poor performing teachers and the hardworking ones therefore identifying the rewarding methods to use (Demir, 2005).

4.7 Factors Influencing the Integration of ICT in Senior High School Management

The third objective of the study was to find out the factors that influence the integration of ICT in the management of senior high schools in the Wa Municipality. The study therefore identified factors that affect as well as those that benefit the use of ICT in the management of senior high schools.

Table 9: Factors Influencing the Integration of ICT in Senior High School Management

Statements	Undecided		Agree		Strongly Agree			
	Freq	%	Freq	%	Freq	%	Mean	SD
Seek external aid in capital for acquiring ICT facilities enhances the integration of ICT in school management	2	20.0%	4	40.0%	4	40.0%	4.20	.789
Enhanced leadership from the top school managers encourage the integration of ICT in school management	1	10.0%	2	20.0%	7	70.0%	4.60	.699
Frequent training of staff on the use of ICT influence the integration of ICT in school management	2	20.0%	4	40.0%	4	40.0%	4.20	.789
Involvement of the staff in decision making has an influence on the integration of ICT in school management	1	10.0%	7	70.0%	2	20.0%	4.10	.568
Involvement of students in use of ICT makes integration of ICT effective for school management	0	0.0%	2	20.0%	8	80.0%	4.80	.422

Source: Field work, 2019

To establish the factors that influence the integration of ICT in the management of Senior High Schools in Wa Municipality, the headmasters were asked to rate on a Likert scale of strongly agree, agree, undecided, disagree and strongly disagree. Their responses were summarized in table 9. However, none of the respondents indicated they disagreed or strongly disagreed in any of the factors influencing ICT integration hence was not displayed on the table.

Table 9 indicates 40% of the headmasters strongly agreed and another 40% agreed that by seeking external aid in capital for acquiring ICT facilities enhances the integration of ICT in school management. This makes them 80% agreeing to the statement. 2 of

the headmaster respondents making 20% said they were undecided whereas none of the heads disagree or strongly disagree on the statement.

The respondents (headmasters) said that Enhanced leadership from the top school managers can encourage the integration of ICT use in school management. This is shown on the table 11 by 70% strongly agreeing, 20% agreeing and 10% indicating they are undecided.

Eight heads representing 80% affirms that frequent training of staff on the use of ICT could have a high influence on the integration of ICT in school management. The remaining 20% were undecided as to whether training of staff had an effect on ICT integration in management of schools. Nine (90%) of the respondents confirmed that they either agreed or strongly agreed that the involvement of the staff in decision making has an influence on the integration of ICT in senior high school management. Involvement of students in the use of ICT encourages the integration of ICT for school management has been proven by all the ten (10) headmasters of the sample schools who agree and strongly agree with the statement representing a 100% of the study sample. Inadequate capital to acquire ICT facilities is one of the key factors that hinder the integration and implementation of ICT use in the management of the schools (Albugami & Ahmed, 2015). The study proved their literature by establishing that majority of the headmasters agreed that one way of enhancing the integration of ICT in senior high school management is seeking external aid in the form of capital for acquiring ICT facilities. Findings from the study also show that enhanced leadership on the use of ICT by the school managers improved the integration of ICT in school management. This coincides with the findings of Ngugi (2012) who found that school managers' regular use of ICT tools in executing their managerial functions in the school has a motivation on other staff who embraces the same and therefore promotes the overall integration of

ICT use in school management. Findings of the study again show that through the engagement of the staff in the decision-making processes, schools are able to integrate the use of ICT in their management. This coincides with the findings by Muntisya (2013) who established that heads of schools, who engage their staff in decision-making processes of the school on the use of ICT in management, end up getting more cooperation from the staff and this enhances the integration of ICT in school management. From the findings it is evident that students' involvement in use of ICT enhances the integration of ICT in the management process of the school. (Kipsoi, Chang'ach, & Sang, 2012).

In their study, the challenges of using information communication technology (ICT) in school administration in Kenya, found that students are the key determinants of a success of a project in the school set up and thus their inclusion in use of ICT means high integration of ICT use in school management.

CHAPTER FIVE

SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

5.1 Overview

This section presents the summary of findings, conclusion and recommendations of the study based on the objectives that guided this research. Conclusions are based on the study findings and analysis conducted in the previous chapter. The recommendations are made with regard to the conclusions reached after the data were analyzed.

5.2 Summary of Findings

5.2.1 Technology that managers have access to in schools

The study found that 10(100%) of the schools had desktop computers. Further, the study found that 9(90%) of the schools had printers. Other ICT tools were scarce in the schools such as laptops and scanners which are very essential in the integration of ICT in teaching. The findings show that the schools have the essential ICT tools and this goes in consonance with the literature review that the basic ICT tools such as computers are essential in the integration of ICT use since they form the crucial part in enhancing ICT in school management (Ranjit Singh & Muniandi, 2012).

5.2.2 Extent of ICT use in management activities of Senior High Schools

The study sought to find out the extent to which ICT is used in the management of Senior High Schools in the Wa Municipality. The study found that in majority of the schools, ICT was used in getting information from the administration. Also a good number indicated that they used ICT in communicating with various parties within and out of the school. The access to computers was perceived to be moderate as per the study results. This compares to the findings by Caganaga (2015) that

limited access to ICT tools from teachers affects the usability of the tools in performing administrative activities and teaching in schools.

5.2.3 Factors Influencing the Integration of ICT in School Management

The study found that majority of the schools were influenced by the need to integrate activities in the schools and have them run by the same process. The study further found that some other factors that also affected the integration of ICT in senior high school management were inadequate funds to acquire ICT tools, failure to adapt to changes by the relevant authorities, mismanagement of the available resources, and irresponsibility among the users of the ICT resources as well as less support from the relevant authorities. The findings go hand in hand with a research by Apperson, Laws, & Scepansky (2006) who emphasizes that students should adapt to changes as well as be responsible enough to take care of the available resources.

5.3 Conclusion

ICT is a very important component as far as management of any institution is concerned in recent time. Due to a vast evolution in technology around the globe, it calls for adequate attention to be given to schools ICT resources by school management. School administration and management must realize that the use of ICT in education will lead to the achievement of universal education worldwide. For this purpose, strategic planning for the use of ICT applications for administration and management, which will promote opportunities for all students, teachers and staff, is important.

The study therefore concludes that many schools are yet to integrate ICT use in their management process to the required standards. The study concludes that many schools have not fully adapted ICT use in management due to various reasons such as lack of enough support from the relevant authority like governments, inadequate resources, resistance to change by the parties concerned like teachers and other employees, poor maintenance of the available ICT resources and the changes in technology. Unfavorable curriculum was also cited as one of the factors hindering the integration of ICT.

The study further concludes that the schools training that the teachers and other parties involved in school management is not adequate. Although the training is effective and bears better results for the institutions, sustainability of training is yet to be enhanced in most of the schools. Lack of enough funds as well as poor commitment by the school management have been cited as one of the reasons as to why ICT training has been poorly done.

On the perception of teachers and principals on the use of ICT in school management, the study concludes that the principals and some teachers are yet to develop a positive attitude towards the ICT adoption in the management of their school activities. Lack of positive attitude on ICT related matters among the leaders in the school means that the seriousness of integrating ICT in the school management was poorly done.

This study discussed the functions of ICT systems in different sectors of educational organizations that can promote teaching-learning activities as well as management and administration practices at different stages. Ultimately, the use of ICT applications in schools is advantageous to the administration, staff, teachers and students.

Notwithstanding the value of ICT application in education, research suggests that most teachers and administrators have intermediate level of computer competence and lack of computer literacy (Salleh & Laxman, 2013), thus, it will be challenging to use ICT applications effectively as a result of lack of adequate and effective ICT applications. Blau & Peled (2012), indicates that it is necessary to provide adequate technical infrastructure, tools and services to ensure the progress of ICT integration in the education system in order to address this problem and ensure ongoing training for senior high school management.

5.4 Recommendations

Based on the findings of the study proper technology should be put in place by providing the required ICT facilities for schools so as to enhance the management and administration of senior high schools using current technology. Considering students impasse and strikes in most schools, storing some of the administrative data in databases is a sure way of salvaging data in case of any damage.

The study further recommends that the senior high schools should adopt fully ICT in administration and management by encouraging both teachers and students on the usefulness of ICT. This will improve the extent to which ICT is used in teaching and learning as well as in the administration and management of the schools across the country.

On the factors hindering the integration of ICT in teaching and managing schools, the study recommends that schools should find out the solutions to some of these factors by involving the teachers and students in matters concerning ICT in the schools as well as make consultations from experts even outside the schools. The principals

should also seek financial support from the government, both local, national and international so as to purchase the ICT tools required in school management.

Further, the study recommends that headmasters should facilitate the training of teachers and other parties in the schools so as to be abreast with the latest knowledge on the use of ICT in education. The headmasters should also encourage their teachers to seek training for themselves by rewarding the teachers who use ICT in teaching and performing other activities in the schools.

Finally, the study suggests that administrators need a comprehensive knowledge of ICT integration, and must be willing to use their knowledge and resources to promote technology in their management tasks. It is therefore recommended that teachers and the heads should have a positive perception on the use of ICT in teaching and managing of the school since they will invest more of their time and resources in the integration of ICT in senior high schools.

5.5 Recommendations for Further Studies

The study recommends that further studies should be done on the factors that can enhance access to technology in management of schools and other public institutions.

1. The study was only carried out in the Wa Municipality of Ghana. The study, therefore, recommends that other studies should be done in other parts of the country so as to enhance a nationwide integration of ICT in management of senior high schools.
2. The study was limited to senior high schools only and therefore, other similar studies should be carried on other public institutions which have recorded high negligence of ICT integration over the year.

REFERENCES

Abadiano, M. (2018). Leadership Style in the Utilization-5523.pdf. *International Journal of Management and Commerce Innovation, 5*(2), 1290-1321.

Abdallah, Z. (2012). *The role of information and communication technology in the management of selected secondary schools in Central Uganda.* Kampala. Retrieved August 1, 2019, from https://www.grin.com/document/205464

Afshari, M., Ghavifekr, S., Siraj, S., & Samad, R. S. (2012). Transformational Leadership Role of Principals in Implementing Informational and Communication Technologies in Schools. *Life Science Journal,, 9*(1), 281-284. Retrieved August 6, 2019, from http://www.lifesciencesite.com/lsj/life0901/039_7635life0901_281_284.pdf

Afzaal, H. S. (2012). A preliminary study of school administrators' use of information and communication technologies: Bruneian perspective. *International Journal of Education and Development using Information and Communication Technology (IJEDICT), 8*(1), 29-45. Retrieved August 2, 2019, from https://files.eric.ed.gov/fulltext/EJ1084147.pdf.

Agyedu, G., Donkor, F., & Obeng, S. (2010). *Teach Yourself Research Methods, .* Kumasi: University Press, KNUST.

Agyei, D. (2013). Analysis of Technology Integration in Teacher Education in Ghana. *Journal of Global Initiatives: Policy, Pedagogy, Perspective*, 69-86.

Akhtar, A. H. (2008). Provision of educational technology at secondary school levelin North West Frontier Province Pakistan. *eric educational journal*. Retrieved February 20, 2019, from http://files.eric.ed.gov/fulltext/ED503018.pdf.

Albugami, S., & Ahmed, V. (2015). Success factors for ICT implementation in Saudi secondary schools: From the perspectiveof ICT directors, head teachers, teachers and students. *International Journal of Education and Development using Information and Communication Technology(IJEDICT)*, 36-54.

Alghamdi, A., & Li, L. (2013). Adapting Design-Based Researchas a Research Methodology in Educational Settings. *nternational Journal of Education and Research*, 1-12.

Apperson, J., Laws, E., & Scepansky, J. (2006). The impact of presentation graphics on students' experience in the classroom. *Computers & Education, 47*(1), 116-126.

Ayere, M. A., & Agak, F. Y. (2010). E-Learning in Secondary Schools in Kenya. A Case of NEPAD E-Schools. *Educational Research and Reviews, 5*(5), 218-223. Retrieved from https://eric.ed.gov/?id=EJ887342

Basri, W. S. (2018). ICT Adoption Impact and Student's Academic Performance: Evidence from Saudi Universities. *Education Research International*, 9.

Beauchamp, G. (2017). *Computing and ICT in the primary school.* London: Routledge, Taylor & Francis Group.

Biegon, T. C. (2019). The extent of ICt use in Public School Management. *Kenyatta University*. Retrieved July 7, 2019, from https://ir-library.ku.ac.ke/bitstream/handle/123456789/18845/The%20extent%20of%20ICT%20integration%20in%20public%20secondary%20school%20management....pdf?sequence=1&isAllowed=y

Blau, B., & Peled, Y. (2012). Teachers' Openness to Change and Attitudes towards ICT: Comparison of Laptop per Teacher and Laptop per Student Programs. *Interdisciplinary Journal of e-Skills and Lifelong Learning*, 073-082.

Blumberg, B., Cooper, D., & Schindler, P. (2005). *Business Research Methods.* Berkshire: McGraw Hill Education.

Broni, K. R. (2018). *The Use of Ict for Teaching and Learning in Senior High Schools In Ghana: A Study of Nungua And Presbyterian, Teshie.* Accra: University of Ghana. Retrieved from http://ugspace.ug.edu.gh/bitstream/handle/123456789/26126/The%20Use%20of%20Ict%20for%20Teaching%20and%20Learning%20in%20Senior%20High%20Schools%20in%20Ghana%20A%20Study%20of%20Nungua%20and%20Presbyterian%2c%20Teshie..pdf?sequence=1&isAllowed=y page 22).

Bryman, A. (2016). *Social Research Methods,* (5th ed.). Oxford: Oxford Oxford University Press cop.

Burgess, R. (2016). *The Ethics of Educational Research Volume 8 of Social Research and Educational Studies Series* (Vol. 24). Colorado: Taylor & Francis Group. Retrieved August 5, 2019, from https://pdfs.semanticscholar.org/3d72/1907de7e64a0084952e41255359d586d1e2c.pdf.

Caganaga, C. (2015). Principals' Reflections on Effectively Managing Their Schools: Cooperative Leadership and Its Role in Schools. *OALib, 2*(11), 1-9. doi:10.4236/oalib.1101962.

Cakir, R. (2012). Technology Integration and Technology Leadership in Schools as Learning Organizations. *The Turkish Online Journal for Eduational Technology, 11*(4). Retrieved March 13, 2019, from http://www.tojet.net/articles/ v5i2/526.pdf

Chakrabartty, S. (2013). Best Split-Half and Maximum Reliability. *Journal of Research & Method in Education, 3*(1), 1-8.

Chandran, E. (2004). *Research methods with illustrations from Christian ministries.* Nairobi: Star Bright Services Limited, Daystar University.

Chen, Y. (2012). A Study of Incorporating Multimedia Technology in Power Point on Demand. *New Educational Review, 27*, 172-183. Retrieved August 9, 2019, from https://www.researchgate.net/publication/286042765_A_Study_of_Incorporating_Multimedia_Technology_in_Power_Point_on_Demand

Christiana, N. (2019). Using Information and Communication Technology (ICT) in Secondary Schoolsin Nigeria: Problems and Prospects. *International Journal of Integrated Research in Education*, 232-236.

Creswell, J. (2012). *Educational research: Planning, conducting, and evaluating quantitative and qualitative research* (4th ed.). Boston, MA: Pearson.

Dipak, R. K., & Kulkarni, S. N. (2012). Use Of ICT In Primary School. *Pioneer Journal*. Retrieved July 16, 2019, from http://pioneerjournal.in/conferences/tech-knowledge/14th-national-conference/3798-use-of-ict-in-primary-school.html.

Dornela, A. O., Odongo, A. J., & Bosire, J. (2015). Factors Limiting the Usage of ICT in the Delivery of Management Services in Public Secondary Schools in Siaya County. *Mediterranean Journal of Social Sciences, 6*. doi:10.5901/mjss.2015.v6n2p554.

England.National.Statistics. (2011). Statistics of education: Survey of information and communication in schools from 2001. Retrieved February 18, 2019, from http://webarchive.nationalarchives.gov.uk/20130401151655/http://media.education.gov.uk/assets/files/pdf/b092001pdf.pdf.

Flick, U. (2015). *Introducing research methodology : a beginner's guide to doing a research project.* London: Sage Publications Ltd.

Ghavifekr, S., Kunjappan, T., Ramasamy, L., & Anthony, A. (2013). Teaching and Learning with ICT Tools:Issues and Challenges from Teachers' Perceptions. *Malaysian Online Journal of Educational Technology, 4*(2).

GoG.Budget. (2018). *2018 Budget Statement.* Accra,Ghana: Ministry of Finance.

Harvey-Woodall, A. (2009). Integrating technology into the classroom: How does it impact student achievement? *Jackson State University*. Retrieved May 5, 2019, from http://files.eric.ed.gov/fulltext/ED505984.pdf.

Higgins, S., & Packard, N. (2004). *Meeting the Standards in Primary ICT, A Guide to ITT NC.* London: RoutledgeFalmer. Retrieved August 5, 2019, from https://epdf.pub/meeting-the-standards-in-primary-ict-a-guide-to-the-ittnc-meeting-the-standards.html.

Ismail, I. (2010). *The proceedings of the 5th international conference on elearning.* Penang, Malaysia: University of Malaysia.

Istaiteyeh, R. (2011). *Economic development and highly skilled returnees: The impact of human capital circular migration on the economy of origin countries: The case of Jordan.* Unidruckerei, Germany: University of Kessel.

Kate, K., Belinda, C., Vivienne, B., & John, S. (2003, May 01). Good practice in the conduct and reporting of survey research. *International Journal for Quality in Health Care, 15*(3), 261-266. Retrieved August 5, 2019, from https://doi.org/10.1093/intqhc/mzg031

Kazi, E. (2012). The Role of ICT in School Management of Maldives. *The New Educational Review*, 270-282.

Kipsoi, D., Chang'ach, D., & Sang, H. (2012). Challenges Facing Adoption of Information Communication Technology (ICT) In Educational Management in Schools in Kenya. *Journal of Sociological Research*.

Kukali, A. N. (2013). Opportunities and challenges for use and integration of information communication technology in management of public secondary schools in Bungoma South District, Kenya. *International Journal of Science and Research, 2*(8). Retrieved June 20, 2019, from http://www.ijsr.net/ archive/v2i8/ MDUwNzEzMDE=.pdf.

Kumar, R. (2010). *Research Methodology.* New Delhi: APH Publishing Company.

Leask, M., & Pachler, M. (2013). *Learning to teach in the secondary schools:A comparison of school experience.* New York: Routledge.

Lipesa, H. (2018). Effectiveness of Integrating Information Communication Technology in Enabling E-Leadership in Public Secondary Schools, Busia County, Kenya. *SSRN Electronic Journal*.

Menjo, D. K., & Boit, J. N. (2015). *The challenges of using information communication technology (ICT) in school administration in Kenya.* Kenya. Retrieved August 7, 2019, from http://www.kaeam.or.ke/articles/vol1/menjofulltext.pdf.

Mingaine, L. (2013). Challenges encountered by Principals during Implementation of ICT in Public Secondary Schools, Kenya. *Journal of Sociological Research, 4*(2), 1. doi:10.5296/jsr.v4i2.3552.

Miraz, M., Saleheen, F., Manzur, S., Khan, H., & Rahman, M. (2016). ICT Integration in Management for Public Educational Institutions in Bangladesh. *Open Journal of Advances in Business & Management (OJABM), 1*(1), 23-30. Retrieved from www.researchgate.com.

MoE. (2015). *Ghana ICT in Education Policy.* Accra: Ghana Ministry of Education.

MoE (2018). *Education Strategic Plan 2018-2030.* Accra, Ghana: Ministry of Education. Retrieved March 23, 2019, from http://moe.gov.gh/edge/content/uploads/2019/05/Education-Strategic-Plan-2018-2030.pdf.

Moindi, R., & Sang, A. (2016). Effects of Principals' Communication Abilities on The Adoption Of Strategic Management In Public Secondary Schools In Baringo County, Kenya. *The International Journal of Social Sciences and Humanities Invention*.

Mugenda, A. G. (2008). *Social science research: theory and principles.* Nairobi: Applied Research and Training Services.

Mumtaz, S. (2000). Factors affecting teachers' use of information and communications technology: a review of the literature. *Journal of Information Technology for Teacher Education, 9*(3), 319-342. doi:10.1080/14759390000200096

Mwalongo, A. (2011). Teachers' perceptions about ICT for teaching, professional development, administration and personal use. *International Journal of Education and Development using Information and Communication Technology, 7*(3), 36-49. Retrieved October 8, 2018, from file:///C:/Users/User/Downloads/EDICT-2011-1272.pdf

Ngugi, P. (2012). *An investigation into the extent of the use of ICT in education management in public secondary schools in Naivasha District, Kenya.* Nairobi, Kenya: Unpublished Report.

Obradovic, D. (2016). The Role Innovation on Strategic Orientations and Competitiveness of Enterprises. *Ecoforum*.

Offevenger, W., Van der Akker, J. J., & Fater, L. (2007). *Developing sciences, mathematics and ICT education in Sub-Saharan Africa: patters andpromising practices.* Washington DC: The World Bank.

Oluoch, D. (2016). Strategies of Enhancing ICT Use in the Delivery of Management Services in Public Secondary Schools in Siaya County in Kenya. *European Scientific Journal*, 1-22.

Orodho, J. A. (2012). *Elements of education and social science research methods.* Nairobi: Masola Publishers.

Oyedemi, O. A. (2015). ICT and Effective School Management:Administrators' Perspective. *World Conference on Engineering*, *I.* London, U.K.

Oyier, C., Odundo, P., Lilian, G., & Wangui, K. (2015). Effects of ICT Integration in Management of Private Secondary Schools in Nairobi County, Kenya: Policy Options and Practices. *World Journal of Education, 5*(6).

Philips, R., & Sianjina, R. (2013). Cyber security for educational leaders: A guide to understanding and implementing technology policies. *Routledge*.

Pi-Sui, H., & Priya, S. (2008, 01 01). A Case Study of Enabling Factors in the Technology Integration Change Process. *Educational Technology and Society, 11*, 213-228.

Ranjit Singh, T., & Muniandi, K. (2012). Factors Affecting School Administrators' Choices in Adopting ICT Tools in Schools – The Case of Malaysian Schools. *International Education Studies, 5*(4), 21-30. doi:10.5539/ies.v5n4p21

Resta, P., & Laferriere, T. (2008). Issues and challenges related to digital equity. International handbook of information technology in primary and secondary education. *In J. Voogt, & G. Knezek (Eds.)*, 765-778.

Rodríguez, R. M. (2010). Implementación process of technology in education: the case of blackboard 9.1 in the university of Manchester. *Rev. Actual. Investig. Educ*. Retrieved January 8, 2019, from https://www.scielo.sa.cr/scielo.php?script=sci_arttext&pid=S14094703201300 0300007#Correspondencia1

Salleh, S., & Laxman, K. (2013). Investigating the factors influencing teachers' use of ICT in teaching in Bruneian secondary schools. *Education and Information Technologies, 19*(4), 747-762. doi:10.1007/s10639-013-9251-2.

Saunders, M., Lewis, P., & Thornhill, A. (2012). *Research methods for business students, 6th Ed.* Harlow: Harlow : Financial Times Prentice Hall.

Seidu, A. &. (2015). Promoting teaching and learningin Ghanaian Basic Schools throughICT. *International Journal of Education and Development using Information and Communication Technology (IJEDICT), 11*(2), 113-125.

Silverman, D. (2014). *Doing Qualitative Research: A practical handbook.* Place of publication not identified: Sage Publications.

Singh, A., & Masuku, M. B. (2014). 0386 Sampling techniques and determination of sample size in applied statistics research: an overview. *International Journal of Economics, Commerce and Management, II*(11). Retrieved August 3, 2019, from http://ijecm.co.uk/ISSN 2348 0386

Singh, G. (2014). *Research Methodology: An Introduction.* Saarbr.c ken: Lap Lambert Academic Publishing.

Singh, T. R., & Muniandi, K. (2012). Factors Affecting School Administrators' Choices in Adopting ICT Tools in Schools – The Case of Malaysian Schools. *International Education Studies, 5*(4). Retrieved August 2, 2019, from http://www.ccsenet.org/journal/index.php/ies/article/view/16222.

Sushmita, S. (2007). *Educational Management and Administration.* New Delhi: Adhyayan Publishers & Distributors.

Tella, A. (2011). Availability and Use of ICT in South-Western Nigeria Colleges of Education. *Internation Multidisciplinary Jurnal, 5*(5), 315-331. Retrieved from http://dx.doi.org/10.4314/afrrev.v5i5.25

Thatcher, R. (2010). Validity and Reliability of Quantitative Electroencephalography. *Journal of Neurotherapy*, 122-152.

Twining, P. (2001). Planning to use ICT in Schools. *Education, 29*(1), 9-17. doi:10.1080/03004270185200031

UNESCO. (2011). *Transforming education: The power of ICT policies.* France: Unites Nations Economic and Socio-Cultural Organisation (UNESCO).

United Nations. (2012). *United Nation's development strategy beyond 2015.* Retrieved June 6, 2019, from http://www.un.org/en/development/desa/policy/cdp/cdp_publications/2012cdppolicynote.pdf.

Wimmer, R. D., & Dominick, J. R. (2006). *Mass media research: Introduction* (8th Ed.). Austtralia: Thomson Wadsworth.

APPENDICES

APPENDIX A

Sample Population Distribution

Name of School	Teachers	Students
T.I Ahmadiyya Senior High School	82	1498
Wa Senior High School	121	1957
Wa Senior High Technical School	76	1289
Islamic Senior High School	67	934
Northern Star Senior High School	13	222
Jamiat Al-Hidaya Girls Senior High School	22	485
Tupaso Senior High School	17	614
Aswaj Senior High School	8	172
Wa Technical Institute	75	1195
Wa Community Development Voc/Tech Institute	18	486
Total	**499**	**7852**

APPENDIX B

Questionnaire for Headmasters

UNIVERSITY OF EDUCATION, WINNEBA

COLLEGE OF TECHNOLOGY EDUCATION, KUMASI

Preamble: This questionnaire is designed to solicit your views on information communication technology (ICT) integration in the management of senior high schools in Ghana. The researcher is a student at the University of Education, Winneba and the questionnaire is used to collect field data for his dissertation. You are informed that the response you give will be used only for academic purposes and kept highly confidential and anonymous. I therefore solicit your consent and cooperation to participate in the study.

Please indicate the appropriate response with a tick (√) in the spaces provided and use the provided spaces for explanation where necessary.

Section A: Respondents biodata

1. Gender: Male [ ] Female [ ]
2. Age: Under 25 [ ] 26 – 35 [ ] 36 – 45 [ ] 46 – 55 [ ] 56 and above [ ]
3. Highest educational level attained:

   Post Diploma [ ] 1st Degree [ ] Masters [ ] PHD [ ]
4. How long have you been headmaster of this school?

   0 – 3years [ ] 4 – 8 years [ ] 9 – 12 years [ ] 13 years and above [ ]
5. Have you had any training in the use of ICT facilities?

   Yes [ ] No [ ]

Section B: Technology Access to management of senior high schools

6. Do you have ICT facilities in your school?

   Yes [ ] No [ ]

7. If **No**, are you putting plans in place to acquire ICT facilities?

   Yes [ ] No [ ]

8. How were the ICT facilities in the school acquired? Tick using (√)

   a. From school funds (PTA, School fees) [ ]

   b. Government (MoE, GIFEC) [ ]

   c. From private donations [ ]

   d. From Alumnus [ ]

9. Is the school connected to the internet?

   Yes [ ] No [ ]

10. If yes, give the type of connectivity VSAT [ ] Dial up [ ] Wireless [ ] Broadband [ ]

11. Indicate whether the following ICT tools are available in your school Tick if available

    Laptop [ ]

    LCD projector [ ]

    Modems [ ]

    Printer [ ]

12. How many functional computers do you have in your school for administration and management purposes?

    1 - 5 [ ] 6 - 10 [ ] 10 - 15 [ ] More than 15 [ ]

13. Where do you mostly access ICT resources?

    School ICT laboratory [ ] In My Office [ ]

    Staff Common Room [ ] Classroom [ ] Other (please specify)……

Indicate the appropriate response on the level of access of ICT in your school

	Statement	**Strongly Disagree**	**Disagree**	**Undecided**	**Agree**	**Strongly Agree**
14.	I have a computer and other ICT tools like internet used in managing the school					
15.	The heads of departments are provided with essential ICT tools for managing the activities of their departments					
16.	Students have access to computers for checking memos sent to them by the school management					
17.	All management staff are provided with computers for the school management practices					

Section C: Extent of ICT use in management of senior high schools

On average, how often do you use ICT tools to perform the following managerial functions of the school?

	Function	**Always**	**Often**	**Sometimes**	**Rarely**	**Never**
18.	General management activities					
19.	Keeping and monitoring school records					
20.	Communicating to students and staff					
21.	Monitoring staff performance					
22.	Assigning duties to staff					
23.	Maintaining teachers attendance records					
24.	Keeping teachers performance and appraisal records					
25.	Validating of staff monthly emoluments					
26.	Communicating with parents					
27.	Preparation of school budget					

Section D: Factors that influence the integration of ICTs in the management of senior high schools

Please indicate your level of agreement or disagreement with the following statements.

	Statement	Strongly Disagree	Disagree	Undecided	Agree	Strongly Agree
28.	Seek external aid in capital for acquiring ICT facilities enhances the integration of ICT in school management					
29.	Enhanced leadership from the top school managers encourage the integration of ICT in management					
30.	Frequent training of staff on the use of ICT influence the integration of ICT in school management					
31.	Involvement of the staff in decision making has an influence on the integration of ICT in school management					
32.	Involvement of students in use of ICT makes integration of ICT effective for school management					

33. Briefly comment on the effect of ICT tools on the performance of administrative tasks in the school.....

.....

.....

Thank you for sincerely completing this questionnaire.

APPENDIX C

Questionnaire for Teachers

UNIVERSITY OF EDUCATION, WINNEBA

COLLEGE OF TECHNOLOGY EDUCATION, KUMASI

Preamble: This questionnaire is designed to solicit your views on information communication technology (ICT) integration in the management of senior high schools in Ghana. The researcher is a student at the University of Education, Winneba and the questionnaire is used to collect field data for his dissertation. You are informed that the response you give will be used only for academic purposes and kept highly confidential and anonymous. I therefore solicit your consent and cooperation to participate in the study.

Please indicate the appropriate response with a tick (√) in the spaces provided and use the provided spaces for explanation where necessary.

SECTION A: Background Information

1. Gender:

   Male [ ] Female [ ]

2. Age bracket

   20 – 25 years [ ] 26 – 35 years [ ] 36 – 45 years [ ] Above 46 years [ ]

3. What is your highest qualification?

   HND [ ] Diploma [ ] Bachelor's Degree [ ] Master's Degree [ ]

   PhD [ ]

4. How long have you been a teacher in the present school?

   1-5 years [ ] 6-10 years [ ] 11-15 years [ ] Above 16 years [ ]

5. What is your main field of study?

   Science [ ] Business [ ] General Arts [ ] ICT [ ]

   Home Economics [ ] Visual Arts [ ] Technical [ ]

7. What subject do you teach?

   .....

8. Have had any ICT training in last two years?

   Yes [ ] No [ ]

Section B: ICT Access and Availability in the Management of Senior High Schools

8. Do you have ICT facilities in your school?

   Yes [ ] No [ ]

9. If **yes,** what ICT facilities are available? (Tick (√) where appropriate)

   Computer [ ]

   Radio (Tape recorder) [ ]

   Projectors [ ]

   Internet [ ]

   Smart boards [ ]

10. If **No,** what ICT facilities are do you require? List them below

    ……

    …….

11. Indicate the appropriate response on availability and adequacy of ICT equipment in your school by ticking (√).

ICT Hardware	Available	Adequate
Desktop computers		
Laptops		
Printer		
Scanner		
Photocopier		
LCD Projector		

12. Indicate by ticking (√) the available software (programs) in your school.

Word processor [ ] PowerPoint [ ] Spreadsheets [ ]

Databases [ ] Others (specify)…….....

SECTION C: Extent of ICT use in Management of Senior High Schools

On average, how often do you use ICT tools to perform the following managerial functions of the school?

	Function	Always	Often	Sometimes	Rarely	Never
13.	Raising school matters to heads					
14.	Receiving information and orders from the head					
15.	Monitoring students class attendance					
16.	Seeking for authorizations from the school head					
17.	Participating in decision making process					
18.	Preparing and checking school timetable					

19.	Marking exam entries and generating results					
20.	Monitoring students' academic records					
21.	Preparation of students report forms for parents					
22.	Preparing schemes of work and lesson plans					

SECTION D: Factors Influencing the Integration of ICTs in the Management of Senior High Schools

Please indicate your level of agreement or disagreement with the following statements.

	Statement	**Strongly Disagree**	**Disagree**	**Undecided**	**Agree**	**Strongly Agree**
23.	Seek external aid in capital for acquiring ICT facilities enhances the integration of ICT in school management					
24.	Enhanced leadership from the top school managers encourage the integration of ICT in management					
25.	Frequent training of staff on the use of ICT influence the integration of ICT in school management					

26.	Involvement of the staff in decision making has an influence on the integration of ICT in school management					
27.	Involvement of students in use of ICT makes integration of ICT effective for school management					

28. To what extent do the headmasters' characteristics influence ICT integration in school management?

Less extent [ ] No extent [ ] Undecided [ ] Some extent [ ]

Great extent [ ]

29. Which of the headmaster related factors below have the greatest influence on ICT integration?

Age [ ] Gender [ ]

Education level [ ] Professional Experience [ ]

30. Which is the major school related factor that influence the headmaster's in integration of ICT in management of schools?

Lack of adequate ICT facilities (e.g computers) [ ]

Financial constraints [ ]

Inadequate trained personnel [ ]

Out dated software [ ]

Thank you for sincerely completing this questionnaire.

APPENDIX D

Questionnaire for Students

UNIVERSITY OF EDUCATION, WINNEBA

COLLEGE OF TECHNOLOGY EDUCATION, KUMASI

Preamble: This questionnaire is designed to solicit your views on information communication technology (ICT) integration in the management of senior high schools in Ghana. The researcher is a student at the University of Education, Winneba and the questionnaire is used to collect field data for his dissertation. You are informed that the response you give will be used only for academic purposes and kept highly confidential and anonymous. I therefore solicit your consent and cooperation to participate in the study.

Please indicate the appropriate response with a tick (√) in the spaces provided and use the provided spaces for explanation where necessary.

Section A: Biodata

1. Gender: Male [ ] Female [ ]

2. Class level: SHS 1 [ ] SHS 2 [ ] SHS 3 [ ]

Section B: Technology access in senior high schools

3. Does your school have a Computer Laboratory?

   Yes [ ] No [ ]

4. If **yes**, do you get access to them during and after your computer lessons?

   Yes [ ] No [ ]

5. Do your teachers use ICT tools in teaching?

   Yes [ ] No [ ]

6. If **yes**, what ICT tool does your teacher most often use? (Tick (v) where applicable)

   Computer [ ]

   Radio (Tape recorder) [ ]

   Projectors [ ]

   Internet [ ]

   Laptop [ ]

Section C: Extent of ICT use in management of senior high schools

11. Indicate if the following statements are **True, Neutral** or **False**. (**T=True, N=Neutral and F=False)**

   a. ICT helps in making teaching and learning more interesting. [ ]

   b. ICT enhances quality of work of both teachers and students. [ ]

   c. ICT enhances efficiency of workers. [ ]

   d. It makes decision-making in the education sector easy and faster. [ ]

How often do you make use of the following ICT facilities?

	Function	**Always**	**Often**	**Sometimes**	**Rarely**	**Never**
12.	Finding information of your school via the internet					
13.	Finding information from e-library e.g. Encarta					
14.	Communication with teachers and other students using email					
15.	Chatting and networking e.g. facebook and twitter					
16.	Accessing end of term results					

Section D: Factors influencing the integration of ICTs in the management of senior high schools

Statements in the table below are factors influencing the use of ICT tools in teaching and learning. Tick where you agree or disagree.

	Statement	**Strongly Disagree**	**Disagree**	**Undecided**	**Agree**	**Strongly Agree**
17.	My schools lack computer literate teachers.					
18.	Irregular power supply hinders the use of computers in school.					
19.	There are inadequate facilities to support full application of ICT tools.					
20.	Teachers are very reluctant to adopt the use of ICT in teaching-learning process.					
21.	Lack of confidence of using ICT tools by some teachers.					

Thank you for sincerely completing this questionnaire.