UNIVERSITY OF EDUCATION, WINNEBA

APPLICATION OF INFORMATION TECHNOLOGY IN SCHOOL ADMINISTRATION IN PUBLIC SENIOR HIGH/TECHNICAL SCHOOLS IN UPPER WEST REGION, GHANA

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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, VITUS BONDIRIKUU GYIELE, declare that this dissertation with the exception of quotations and references contained in published work 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 this 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

I dedicate this piece of work to my lovely wife Bridget Dakura for your unflinching support and prayers, to my children Briana, Brian and Brenden. I could never have had a better family than you.

ACKNOWLEDGEMENT

I wish to express my sincere and profound gratitude to the Almighty God for my life. Special thanks go to my dear wife Bridget Dakurah for her moral support and encouragement.

I also wish to acknowledge my course mates: Bertrand, Fred, Emmanuel and Deo-Donne for their support and ideas that has helped in shaping this work.

A very special thanks to my supervisor, Dr. Samuel Adu-Gyamfi, for the guidance and mentorship who has helped me to come out with this work.

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LIST OF ABBREVIATIONS

NSDT	:	Nursing Services Delivery Theory
IT	:	Information Technology
ICT	:	Information and Communications Technology

ABSTRACT

The study seeks to examine the application of Information Technology in the administration of public senior high/technical schools in Upper West Region. The objectives of the study sought to examine how school administrators apply information technology in human resource administration, physical resource administration, financial resource administration and also to examine the challenges facing school administrators in the application of information technology in school administration in public senior high/technical schools in Upper West Region. A survey research design was used to conduct the study. The targeted population consist of administrators of public senior high/technical schools in Upper West (36 schools). The sample size was twenty schools (n=20) with each school having 6 participants. This brings the total sample size to one hundred and twenty (n=120). A simple random sampling procedure were adopted. Questionnaires were used to collect the data. The collected data were analyzed using both qualitative and quantitative approaches. From the analysis, the following conclusions were made: Most public senior high/technical schools have adopted the use of information technology as a good tool in their day-to-day operations, in the area of human resource administration, IT is applied in monitoring staff attendance, keeping of personal records of both staff and students, e-learning, training of teachers in basic application as students' reports, enrolling students during admission. It is also used in financial administration of schools and many others. These were however not without challenges. These challenges have hindered the effective application of IT in school administration. They include lack of IT personnel, inadequate funds, lack of/inadequate computers and lack of backup power supply.

CHAPTER ONE

INTRODUCTION

This chapter gives an overview of the application of Information Technology in school administration in public Senior High/Technical Schools in Wa-Ghana. The chapter consists of following sections; background of the study, statement of the problem, purpose of the study, objectives of the study, significance of the study, limitations of the study, scope of the study, theoretical framework, and conceptual framework of the study.

1.1 Background of the Study

The application of Information Technology in the administration of schools by headmasters and principals in Senior High/Technical Schools has some positive effects if well implemented. For instance, it could lead to improvement of the school standards in respect of academics, co-curricular activities, records keeping and financial status among others. Information Technologies (IT) is a general term that consist of any communication device or application such as radio, television, cellular phones, computer, and network hardware and software, satellite systems and many others, as well as other services and applications associated with these devices. When such applications or technologies are used for the support of school administration; namely to support and improve School administration, Information technology can be considered as a sub field of Educational Technology, (Kumar, 2008). The potential of information technology (IT) in enhancing human capabilities and transforming the management of organizations was realized in human society, mostly in the business world, and military in education, (Ray & Davis, 1991). The contribution of IT is also essentially recognized, both in the workplace and at home, (Dawes, 2001), (Preston,

Cox, & Cox, 2000). These are but few instances that showed that, Technology is increasingly becoming a vital tool in every human endeavour and as such cannot be ignored by Headmasters and school principals in the management and administration of schools, (Clark & Meyor, 2003). Tutorials or educational software, were designed to help learners acquire knowledge and develop essential skills, (Clark & Meyor, 2003) (Zones, 2005). By the early 1980s, Computer Assisted Learning (CAL) emerged, and in the mid-1990s, IT was being applied in other disciplines. Technological advancements in the world are obvious. This is evidence in terms of the number of fixed and mobile telephone lines; the number of computers' applications and services; Internet Service Providers (ISPs), Internet users; broadcasting stations and many others areas are a result of the prevailing business climate and economic growth the world is witnessing recently. The rapid growth of ICT has thus influenced the rapid introduction of computer applications in school administration and management, hence setting up computer training centres in the world over, (Zones, 2005). One fundamental aspect of education is the imparting of culture from generation to generation. School administration plays a vital role in nurturing the students as required of them. It is also the duty of the school administration to supervise the enrolment of students in school, ensures availability of educational resources, human resources and availability of finance to sustain the daily activities of the school, (Meador, 2011). (Alexis, 2003), also claims that school administrations had to monitor all records of the school activities by entering the details manually in books and records of the schools. However, with the introduction of ICT, various programs come in handy to help minimize the efforts of the administration in monitoring and managing the school and its activities. These applications help school administrators and managements to monitor their daily activities in the school simply by clicking on buttons. Today, the applications of ICT in

School Administration and education are numerous yet, it is not known how they are used in public Senior High and Technical schools in Ghana. Thus, this study seeks to examine the application of Information Technology on effective administration and management of public Senior High and Technical schools in Ghana.

1.2 Statement of the Problem

In spite of the enormous benefits derived from the application of Information technology in schools, it appears most schools underutilized or in some cases very little use of information technology is made. It was during one of my encounters with St. Basilide's Tech/Voc. Institute administration on the provision of some data about the school that arouses my interesting into critically examining the use of Information technology in schools particularly in the area of school administration.

It is an undeniable fact that the application of information technology in any sphere of our daily lives is perceived having the potentials of improving the standards from its lowest form to a greater height. In this case, the use of Information technology in schools comes with an expectation of improved standards. To this end, the appropriate application of IT should commensurate with the out turns. However, there are a number of schools that have embraced the use of IT in administration yet they never improve their standards. These schools are faced with challenges like financial resource mismanagement inefficiencies in human resource management and low students' performance as a results of poor school administrative practices (Karsenti, 2004). This brings to mind the question: has Information Technology been effectively put to use in school administrations? This study thus, seeks to examine the ways in which school administrators use Information Technology in the administration and management of Senior High/Technical Schools in the Upper West Region, Ghana.

1.3 Purpose of the Study

The study aims at examining the application of Information Technology in School administration in public Senior High/Technical schools in the Upper West Region. It will also identify the challenges faced by school managements in the application of Information Technology in schools and measures that can be taken to ameliorate the situation.

1.4 Objectives of the Study

The objectives of this research include the following:

1. To find out how school Administrators apply Information Technology in human resource administration, physical resource administration and financial resources administration in public Senior High/Technical schools in the Upper West Region.
2. To examine the challenges facing school administrators in the application of Information Technology in school administration in public Senior High/Technical schools in the Upper West Region.

1.5 Research Questions

The researcher was guided by the following research questions:

1. How do school administrations apply Information Technology in the administration of physical resources, human resources and financial resources in public Senior High/ Technical schools in the Upper West Region?
2. What are the challenges facing school Administrators and Managers in the application of Information Technology in public Senior High/Technical Schools in the Upper West Region?

1.6 Significance of the Study

This research will be of significance to a number of stakeholders in the educational sector, such as School Managers and administrators, Policy Makers, teachers and any other person interested in education. Computer applications today remain the fundamental components in the administration of any institution. It is hopeful that the findings of this research will be beneficial to school managements by highlighting the various areas that school managers can apply IT. These include instructional leadership, proper management of school facilities, teaching and learning resources and financial management. Measures on improving the application of IT will be spelt out, and better policies and strategies be implemented in the use of Information Technology in the administration of public schools. The study will also be of benefit to teachers, students and other members in schools if the recommendations are considered.

Moreover, the findings of the study are also hopeful to arouse the curiosity of scholars and researchers who may embark on conducting further research on the Application of Information Technology in administration that had been previously given little considerations.

1.7 Scope of the Study

The study focuses on the application of Computer Technology in school administration and management of public Senior High and Technical schools in the Upper West region of Ghana. Thus, it includes how IT is applied in the administration of human resources, physical resources, financial resources, challenges facing the application of IT in School administration and management, and measures to be taken to improve the application of IT in school Administration and management. Headmasters and principals, Assistant Headmasters, Accountants/Bursars, Senior Housemasters/

Mistress, Matrons and Store Keepers were the key informants since they are directly involved in the day to day school administration of their respective schools.

1.8 Operational definition of Terms

1. Administrators: People who are in charge of the day to day running of the school (Headmasters/Principals, Assistant Headmasters, Senior Housemasters/ Mistress, Bursars/Accountants, Matrons, Store Keepers)
2. NSDT: Nursing Services Delivery Theory
3. IT: Information Technology
2. ICT: Information and Communications Technology
3. Human Resource: Here it refers to all the employed members of staff and students
4. Financial Administration: Operations involving all financial transactions and events in the school.

CHAPTER TWO

LITERATURE REVIEW

2.1 Introduction

A large body of knowledge exists in this field of systems theory. There have been several published studies on systems theory in management. This wealth of knowledge amassed through theoretical postulations and vigorous empirical investigations have helped in directing the attention of researchers towards conceptualizing how it has helped in boosting organizational growth through its application.

2.2Theoretical Framework

2.2.1 Open System Theory

Open system theory refers to the concept that organizations are strongly influenced by their environment. The environment consists of other organizations that exert various forces of an economic, political, or social nature. The environment also provides key resources that sustain the organization and lead to change and survival.

The theoretical framework deals with the theory that will be applied in the study as well as their concepts. The theory applied in this case is the Open system theory. The work of (Ludwig, 1976) recognized the need of any organization to interact with its external environment, unlike what was proposed by classical school theorists like Max Weber, F. Tailor and Fayol who viewed organization as a closed system. To him, the survival of an organization like the way organism survives, should operate in an open system but not a closed system. This is what made his work (system concepts) to become recognized worldwide as an approach to be adapted by organization for their efficiency and effectiveness in the dynamic and changing environments. He was against reductionism, arguing that, real systems are open and do interact with external

environment, where he emphasized on holism while solving organization problems. Therefore, open system changed the way of thinking about organizational management from mechanical view of organization.

2.2.2 Conceptual framework

The conceptual framework of this study shows the interaction between the various variables; the dependent and independent variables. The dependent variable being the application of information Technology which is been manipulated by the researcher and the independent variables being the human resources, physical resources and financial resources.

2.3 Understanding Systems Theory

Organizational management systems consist of many internal subsystems that need to be continually aligned with each other. As companies grow, they develop more and more complex subsystems that must coordinate with each other in the process of transforming inputs to outputs (Mcshane, 2014). These interdependencies can easily become so complex that a minor event in one subsystem may amplify into serious unintended consequences elsewhere in the organization. Every organized enterprise does not exist in a vacuum. It is rather known to depend on its external environment – which is a part of a larger system, such as the industry to which it belongs, the economic system and the society (Harold & Heinz, 2006). According to them, the organization receives inputs, transforms them and exports the outputs to the environment as shown in the basic input-output model below.

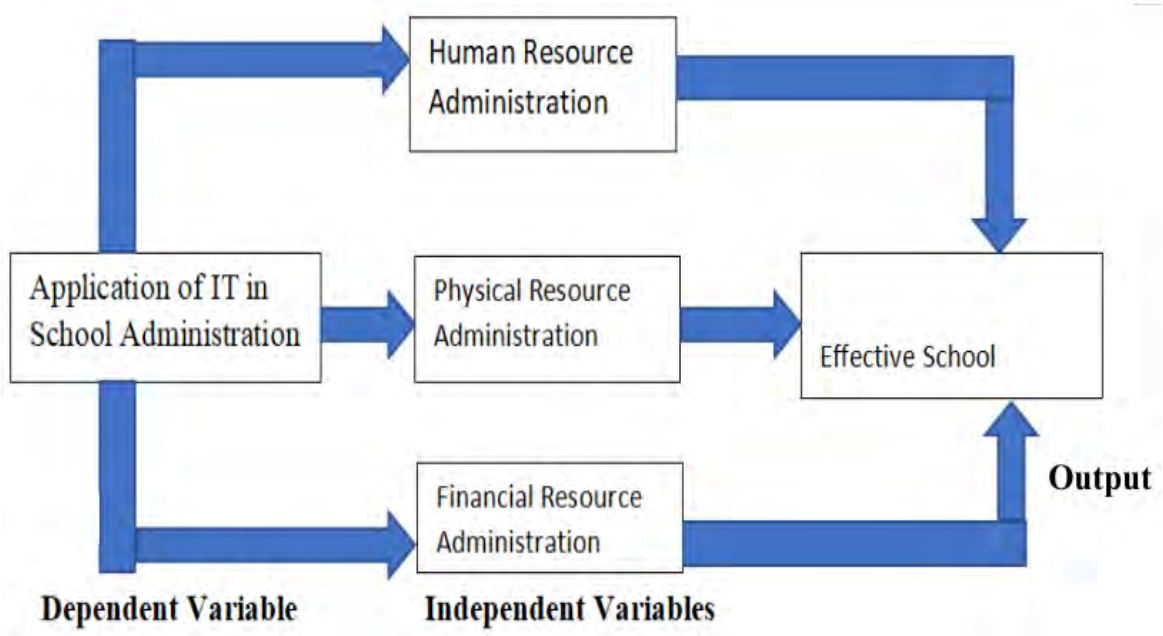

Figure 1: Application of Information Technology in School Administration

As shown in figure 1, the application of ICT has a greater influence on the administration and management of human resources, physical resources as well as financial resources of the schools. The application of Information in human resources administration in schools includes but not limited to the day to day instructional guidance of students, keeping records of students, teachers, and other employees, (Nadler, 1984). Information Technology can also be used in keeping records of physical resources as well as educational materials, (Cheryl H. W., 2005). Thus, it is imperative for school managers and administrators to deploy ICT tools in their day to day running of schools in order to achieve their organizational goals. In their own opinion, the above model requires expansion and development into a model of process, or operational management that indicates how the various inputs are formed through the managerial functions. However, the following sub topics are the basic components of a system. They include; inputs, Process, Variables and Output.

2.4 Open System Theory

2.4.1 Application of Open System Theory in Nursing Services Delivery Theory

The theoretical foundation of the NSDT as an Open System Theory is applied to large-scale organizations, (Meyer & O'Brien-Pallas, 2010). In their view, an organization constitutes an energetic input–output system. An organization depends on its supporting environment for the continuous inputs to ensure its sustainability and processes these inputs through the recurring and pattern activities and interactions of individuals to yield outputs. An organization is therefore essentially a social system. (Meyer & O'Brien-Pallas, 2010), an organization and its subsystems strive to achieve a dynamic steady state whereby regularities in energy flow preserve the character of the system and disturbances prompt system adaptation. Thus, an organization need to counteract entropy in order to survive, which is an inevitable process of disorder and dissolution that is caused by inputs loss or by inability to transform energies. An open system must acquire neg-entropy (i.e. negative entropy), usually through some form of storage capacity, to ensure its continued existence (Meyer & O'Brien-Pallas, 2010). For organizations, negative entropy can involve the renewal of inputs, storing energy, creating slack resources, or maximizing energy that is generated as against the energy been utilized (Galbraith, 1974). Organizations can also counteract entropy by adapting system functioning in response to informational signals and feedback from the environment.

Building on a rich tradition of systems thinking in clinical and nursing management, the NSDT addresses most of the challenges to nurse staffing and nursing work research (Holding 2005).

Jelnek (1967) described a Patient Care System Model composed of personnel types and physical facilities as inputs; organizational and environmental factors as throughput; and patient care, patient satisfaction, and personnel satisfaction as outputs. Subsequently, the interconnection among nursing complexity, medical complexity, nurse characteristics, environmental complexity, and the outcomes were tested in a systems model in community and hospital settings to verify the factors that cause patients or clients with very similar medical conditions to have different nurse resource requirements (Meyer & O'Brien-Pallas, 2010).

In these models, inputs consisted of the characteristics of patients or clients, nurses, and the system and system behaviours; throughput involved the nursing care delivery subsystem, where nursing interventions are performed and its environmental complexity; and outputs involved outcomes for patients or clients, nurses, and the system. (Mark et al. 1996) also applied structural contingency theory, a subset of Open System Theory, to the evaluation of nursing system outcomes. Key variables included environment (e.g. organizational size, skill mix), technology (e.g. stability of patient acuity, diversity of patient conditions), structure (e.g. degree of centralization), and effectiveness (e.g. patient and administrative outcomes). The basic premise was that to perform effectively and to produce quality outcomes, an organization must structure its nursing units to complement the environment and technology.

2.4.2 Open System Theory on Biology

Open systems theory has its foundations in biology, particularly Darwin's work on the evolution of the species. The popular version of open systems theory is attributed to (Ludwig, 1976), who used the term ‘general systems theory’ to describe the main ideas and to distinguish them from closed systems thinking. Ludwig maintained that closed

systems thinking was not appropriate to study biological phenomena because biological systems interact with their environment, grow and survive. However, the environment of living organisms is less forgiving and often the luxury to learn from errors does not exist.

2.4.3 Open System Theory on Organization

Open system theory refers to the concept that organisations are strongly influenced by their environment. This environment consists of other organizations that exert various forces of an economic, political, or social nature. The environment also provides key resources that sustain the organization and lead to change and survival. Open systems theory was developed after World War II in reaction to earlier theories of organizations, such as the human relations perspective of Elton Mayo and the administrative theories of Henri Fayol.

Open system theory was first developed by Ludwig in reaction to earlier theories of organizations which treated the organization largely as a self-contained entity, (Scott, 2002). After its development, the theory immediately became applicable in all disciplines. It is chiefly formed on the concept of a system and thus, best conceptualizes that organizations or any other system; hence strongly influenced by their surrounding systems (Bastedo, 2004).

The work of (Ludwig, 1976) recognized the need for organization to interact with its external environment, unlike what was proposed by classical school theorist like Max weber, F. Taylor and Fayol who view organization as closed system. To him, for survival of an organization like a living organism survives, it should operate in open system and not closed system. This is what made his work to make system concepts

become recognized worldwide as approach to be adapted by organizations for their efficiency and effectiveness in the dynamic and changing environments. He beliefs that real systems are open and do interact with their environment, where he emphasized on holism while solving organization problems.

2.5 Relevance of Theory

This theory of Open systems has altered how one understands a school organization and the demands placed upon educational leaders. Integrating IT application in the environments that make up the school system will apparently help in increasing the success of the school. This shows that, the school administration is the key element that plays a vital role in maintaining and coordinating the other parts of the school system. Information Technology being formulated in making work easier; school administrators are able to coordinate with the other parts of the school system by just a clicking on a button and thus they play their role effectively in organizing other parts of the school environment (Human resource, financial resources, educational resources and others). Contemporary studies of accountability movements, teacher professionalism, and instructional leadership, all benefit from a strongly open systems approach to understanding the environmental demands and the resulting adaptation in school policy and its implementation, or lack thereof, (Scott, 2002). The theory is much relevant to this study since its concept best suits the fact that, a school set up is also a system on its own. In order for it (school system) to be fully functional, there are different aspects that ought to be considered within its environment and especially in the administration of the school. The school administrations interact with their environments in a complex series of interrelated activities, (Pfeffer & Salancik, 2003). Like individual organisms, a school's success depends on how well their characteristics

and behaviour aligned with their surroundings. The environment also provides some key resources that sustain the organization and lead to changes and its survival.

2.6 Concept of Information Technology (IT) and its Applications

Information Technology (IT) is a unified communications integration of telecommunications (telephone lines and wireless signals), computers, middleware, software, storage, and audio-visual systems. It enables users to create, access, store, transmit, and manipulate information. Basically, IT consists of telecommunication, broadcast media and all the other types of audio and video processing and transmission and network-based control and monitoring functions, (Howe, 2010). Thus, it supports all the activities including administration and management of institutions. IT is based on the notion that using IT involves matching it to one's purposes of which it requires a rationale for it to be used successfully.

The application of Information Technology depends on the local culture, the availability of a particular technology and how it is configured and managed. The understanding, management and application of the available technology might vary greatly or slightly from one school to another school. This variation may differ from a collection of tools and devices used for particular tasks, an organized set of equipment for working on information and communication, components of integrated arrangements of devices, tools, services and practices that enable information to be collected, processed, stored and shared with others. Information Technology and its devices that enable learning, problem solving and higher order collaborative thinking application in schools covers a wider scope. This includes the comprehensive approach to methods, management through Information and Communications Technology,

restructuring education system, diversifying teaching-learning methods & practices, engaging all stakeholders of education and adapting to changes in society, the environment, enhancing education efficiency, effectiveness, and productivity, (Gwang-jo, 2009). In school administration, Information Technology is also applicable in the administration of human, physical and financial resources.

2.6.1 How School Administrators Apply Information Technology in Human Resource Administration

Information Technology has been applied in all aspects including health care delivery, engineering, industry, business, agriculture, military, security, law, politics and governance, arts, science and education, among others, (Vernon, 2001). Studies have revealed that Information Technology has been applied in the administration of human resources. (Abdul & Zohora, 2012) conducted a study to investigate the areas of ICT utilization among teachers and principals of Malaysian schools. Quantitative method was used in this study with a representative sample of two hundred and sixty (260) school teachers, teachers-supervisors and principals. The finding of the research revealed that, 84% of the teachers were not aware of the implementation of the national ICT policy, even though it did exist. The finding further indicated that 80% of the schools do not have ICT policy at the school level though the facilities and equipment of ICT were readily available. However, almost all the teachers have prerequisite skills in using computers especially the basic skills needed for teachers in IT. Also, 95% of the schools have photocopy machines and scanners while 85% of the schools have multimedia projectors. Furthermore, 72% of the schools are well equipped with video cameras, overhead projectors and laptops. It was however, interesting that their expertise and skills were not integrated with educational management and

administration and/or with teaching. They were rather used for daily administrative purposes. However, the study did not clarify the type of schools on which the study was conducted. Moreover, the study was done in Malaysia, a developed country as compared to developing countries such as Ghana. Hence, there is the need to find out the application of Information Technology in public Senior High Schools in Ghana.

(Raby, 2004) also carried out another study on ICT integration in public secondary schools in Uganda with the sample consisting of 12 secondary, 12 principals, 3 education officers, 3 curriculum developers and 20 students. Qualitative data were collected using interviews of principals, education officers and curriculum developers while questionnaires were administered to students. The study showed that in most public secondary schools, ICT application in human resource administration was the responsibility of the school principals. According to the study, ICT could assist instructional supervision through facilitating decision-making processes, planning, organizing, communicating, influencing, coordinating as well as evaluating, (Raby, 2004). For a principal or school headmaster to successfully run institution in the various human resource areas such as curriculum development, instructional supervision, staff and students, guidance and counselling, finances, and special services could be time consuming. Also, for the principal to function efficiently and effectively in this current digital and information age, he/she must adopt and be adapted to new technological resources and services in the management and administration of the school.

Telem (2001), also conducted a case study on the Computerization of school administration and its impacts on principals' role. From the study it was realized that, ICT has positive impacts in streamlining administrative processes of the human resources especially in the area of communication. It was further realized that ICT was an essential tool for information dissemination.

(Anamuah-Mensah, 2009); in his study on the Impact of ICT on local development and digital inclusion for small and medium business observed that, the use of computer-mediated communication is very helpful at the work places and the business ventures as well. Reports from the study indicated that the use of computer applications is useful in accounting and finance, financial control, sales, marketing and manufacturing.

2.6.2 Application of ICT in Administration of School Physical Resources

Physical resources include land, buildings, machinery, equipment for manufacturing/ processing, safety, electricity generation, warehousing, roads and communications network, buildings and equipment required to serve the needs of a firm or an institution in relation to its stated purpose, programs and activities, (Karl, 2000). ICT is used widely in the administration of physical resources in secondary schools. (Maki, 2008) observes that Information and Communication Technology (ICT) plays a vital role in supporting efficient management and administration in education. The author further specifies that, technology can be used from student's administration to various resource administrations in educational institutions. Cheryl (2005) conducted a study on ICT Application in administration of physical resources in South Africa. The sample for the study according to Cheryl, comprised of ten (10) firms in Johannesburg, ten (10) C.E.O. of these firms and fifty (50) staff members who were randomly sampled. Findings from the study revealed that in the past few years, ICT application in administration of physical resources have evolved significantly. From the study, ICT was found to be applied in administration of physical resources through online procurement, advertising of firm produces, transactions, and many others. Some school administrators use technological tools such as computers to monitor the ratio of the availability and usage of the various facilities in the schools, (Cheryl H. W., 2005). Some of these physical

facilities includes chairs, tables, books and teaching and learning resources. Without the help of technology, it may be difficult for administrators to monitor the school physical facilities.

2.6.3 Application of IT in Administration of School Financial Resources

Application of Information Technology in school financial resource administration has the potential for increasing accountability, transparency and participation among various stakeholders, (Bertot, Jaeger, & Justin, 2010). With specific reference to the administration of school financial resources, information and technology can help solve the centralization/decentralization problems. This can be achieved by making relevant data on revenue and expenditure easily available and accessible at all school levels. It can also be used to facilitate budget analysis and as such, improving the timeliness of the school budget information.

A study conducted by Miranji (2017), on ICT application in school financial management and administration revealed that most institutions have accounting software packages used to produce statutory accounts and reports for bankers and management, and to help with the day-to-day control of their finances. The study revealed that spreadsheets were also widely used in most schools apart from the various financial software packages used by finance departments to help manage cash flow.

Transparency in school financial transactions is achieved by the application of Information Technology. This serves as a check on school administrators from embezzlement or misappropriation of funds available in school. “This greater transparency would have been possible by means of two factors which usually characterize the digital revolution, and a third aspect far less explained”, (Almiron-

Roig, 2007). School administrators can safely adopt the use of Information Technology in carrying out their administrative tasks such as, payment of their staff, and making orders for school supply, (Cheryl W. H., 2005). Records of all transactions are safely kept by using Information Technology in the administration and management of school finances. Thus, school administrators are able to gauge themselves on how they manage school finances.

"The records of purchases, budget, grants administration, cash flow, audits and other financial transaction carried out by institutions needs proper documentation for reference purposes", (Razae, Elam, & Sharbotoghlie, 2009). The study noted that many institutions were keeping their financial records in hard-copies. However, the introduction of ICT has saved most managements from the risks of keeping copies documents, as all these are now kept electronically. This has gone a long way to ease the workload of school accountants and financial administrators via, on-line system called Electronic accounting (e-accounting). Electronic accounting makes it possible for transactions to be captured, measured, recognized and reported electronically.

According to (Grey, 2005) "the use of ICT enables school administrators to take advantage of e- banking which allows them to check their school bank account records in real time, saving time and ensuring that payments are made and received accordingly". Global and large payments can be made quickly and securely with on-line banking, as long as the school has its own security features to protect against unauthorized access to the system. Accounting software and spreadsheets like MS Excel have been widely used in financial accounting, (Karl, 2000).

2.7 Challenges Facing the Application of Information Technology in Schools

Several challenges are hindering the successful application of Information Technology in schools as identified by many researchers.

Hennessey (2010) identifies the following constraints that hinder the effective application of technology by schools in sub-Sahara Africa as financial constraints, lack of adequate ICT facilities, lack of reliable electricity and inadequate ICT personnel.

Khan et al, (2012) also identifies content characteristics, user characteristics, organizational capacity and technological considerations as factors influencing the application of ICT in school administration and management.

2.7.1 Financial Constraints

According to (Laaria, 2013) "the greatest challenge faced by school administrators and Managers when implementing ICT in their schools is balancing educational goals and economic realities".

Large capital investments are required for effective application of Technology for school administration. Principals and headmasters are therefore, compelled to make prudent decisions about what models of ICT would be implemented for maintaining economies of scale. The goal is to balance the costs incurred relative to the cost of its alternatives.

Other researchers also argue that lack of physical educational facilities, such as classrooms and buildings are major challenges faced by school heads and principals when making decisions on the implementation of ICT, Hennessy (2010). However, in many schools in developing countries such as Ghana, classrooms and other physical facilities are rarely available.

Makhonu, (2010) also argues that, other costs such as duties and taxes levied on ICT products have made it difficult if not impossible for schools in developing countries to effectively implement ICT in school administration. Makhonu further identifies other costs that the school principal has to consider before embarking on the implementation of ICT. Such costs include, costs for training teachers, electricity tariffs, transportation of imported ICT infrastructure and the maintenance costs of the equipment.

Manduku et al (2012) supported these views in that, most public schools in developing countries lack funding for the implementation of ICT and that has often led to over-reliance on external donor funding. This is often due to the fact that there is inadequate funding by governments and as such often pose challenges to school administrations to convince donors to fund the programs in their schools. Other factors may include high cost of the technology, limited connectivity and uneven access to such facilities. Thus, the expenditure on ICT in schools should be significant and continuous.

2.7.2 Inadequate ICT Infrastructure and Poor Maintenance

Availability of Information Technology infrastructure is a key factor for its application and uses in schools. However, a study conducted by (Hennessy & et al, 2010) reveals that there are inadequate facilities such as hardware, software and internet accessibility in developing countries. Other factors revealed by the study are poor transport networks, electricity, high import duties, problems with network configuration, and technical faults have made the situation worst. Makhonu, (2010) notes that in some schools, getting computers is relatively easy; keeping them working is the challenge. The author observes that many problems like attack by viruses, electrical surges, heat, and dust are some of things which sometimes cause damages to computers in schools.

2.7.3 Lack of Reliable Electricity

Electricity plays a vital role in the implementation and use of ICT in schools. It is obvious that electrical energy is basically linked to environmental, economic and social dimensions of sustainable development of any nation, Makhonu (2010). Electricity is a key element which every schools must have before Information technology can be implemented. However, it remains a major challenge in developing countries to obtain, not alone making it more reliable.

2.7.4 Inadequate ICT Training for school Managers and Administrators

School Administrators and Managers skills in using ICT for the running of their schools are critical for efficiency and effectiveness. However, many researches show that, most of them do not have the prerequisite skills in using computers. With proper training on how to implement ICT, headmasters and school principals can appropriately apply Information Technology in school administration and management. However, headmasters have not been given training on the adoption and use of ICT; thus, they lack the skills of using ICT and are therefore insufficiently equipped to deal with the complexity of designing, analysing and implementation of ICT in schools.

2.7.5 Lack of Enough Technical Support

Technical support is vital in maintaining confidence of teachers and principals in reliability of accessing to software and other equipment Makhonu, (2010). Headmasters and Principals have the challenges of ensuring that their schools have well trained technical support for the appropriate application of IT.

2.8 Remedies

Some remedial actions need to be taken to overcome the challenges faced by school managers during the implementation of ICT in the administration in schools. (Boit & Menjo, 2012) suggests that there is the need to put measures to ensure that competent technical support is provided. The authors proposed sharing of specialized IT technicians among schools within the same regions to avoid cost of each school hiring its own technicians.

Buabeng-Andoh (2012), proposes that school heads need to be trained continuously rather than a one-off basis in order for them to keep upgrading their IT skills. According to Laaria (2013), "sensitizing stakeholders on the potential of ICT in schools is essential in order to make them finance its implementation".

The Author realizes that headmasters and principals to a large extent, relied heavily on development partners, NGOs and government to equip schools with ICT facilities. The author suggests that, besides sensitizing stakeholders and waiting for their contributions, principals should regard ICT as priorities in schools and allocate enough budgets to promote its implementation.

CHAPTER THREE

RESEARCH DESIGN AND METHODOLOGY

3.1 Introduction

This chapter focuses on the research methodology used in the study. It presents details of the research design, target population, sample and sampling procedures, description of research instruments, questionnaire, interview, validity and reliability of instruments, data collection procedures, and data analysis techniques. The data was analyzed using computer program, SPSS which enables the data to be presented in frequencies, percentages, tables and figures.

3.2 Research Design

A research design is a plan of action the researcher adopts in answering the research questions. Orodho (2003) describes a research design as a plan, structure and strategy that is employed by the researcher in the course of investigation to obtain answers to research questions and control variance. Kerlinger (1973) also views research design as a framework for the study, serving as the blueprint for the researcher.

Survey research design was used by the researcher due to the following reasons;

i. The design is useful in the description of attributes of a large group, it can cater for a large sample size and also make statistical results significant even as you analyse multiple variables.

ii. It also allows the use of various methods of data collection such as questionnaire and interview methods. Furthermore, it uses standardized questions, hence, reliability of the items is determined, (Owens, 2002).

The researcher used survey design to collect data from school Administrators in public Senior High/Technical schools in the Upper West Region of Ghana. The study used both quantitative and qualitative research paradigms (Mixed-method) for the data collection and analysis. The quantitative research paradigm was used to obtain a sample from a large data and performed statistical analysis in order to produce results that could be generalized to the targeted population. The qualitative paradigm on the other hand, was used to describe the results being collected from the interviews conducted.

3.3 Variables of the Study

This research uses variables base on the objectives of the study. These variables are categorized as independent and dependent variables. The independent variables include human resource administration, physical resource administration and financial resource administration, while the dependent variable is the effective administration of schools.

3.4 Target Population

A population is any set of persons or objects that possesses at least one common characteristic, Basha and Harter (1980). The target population for this study consists of all public Senior High and Technical school administrators in the Upper West Region of Ghana.

3.5 Sample and Sampling Procedures

3.5.1 The Sample population

Mugenda and Mugenda (1999), defines a sample as, a smaller group or sub-group obtained from the accessible population. This smaller group is carefully selected to represent the entire population having the same or similar characteristics. Each member

or case in the sample is referred to as a subject, a respondent or an interviewee. Sampling on the other hand is a procedure, a process, or a technique of choosing a sub-group from a population to participate in the study, (Ogula, 2005). It is the process of selecting a number of individuals for a study in such a way that the individuals selected represent the large group from which they were selected. This study applied the non-probability sampling techniques to obtain the respondents for questionnaires and interviews. Kumekpor (2002), outline the following as advantages of the non-probability sampling techniques:

I. They are convenient to use
II. They have relatively lower cost per unit studied
III. They provide quick results in that, such units are indicative, rather than accurate and realistic or definitive of the situation studied.

3.5.2 Sample of Schools

Since the study uses the non-probability sampling technique, the sample schools were directly selected without sampling. Thus, the sample schools in this study consist of Twenty (20) schools with each school having six respondents which brings the total participants to 120.

3.5.3 Sample of School Administrators

The sample of school administrators were arrived at through purposive sampling procedure due to their positions in their schools. This is also due to the fact that they play very crucial roles during the application of any system in the school.

The research instruments used in this study to collect data from the Administrators include, Self-Administered Questionnaire and Semi-Structures Interviews.

3.6 Data Collection Instruments

3.6.1 Questionnaires for Administrators

Self-Administered Questionnaires were used to collect data from Headmasters/ Principals and other administrators. This instrument was considered simply because it ensures a minimum of interviewer bias and least fear of embarrassing the respondent in answering questions. Respondents are able to complete the questionnaire themselves at their own leisure time, questions are also self-explanatory, and it involve less cost to construct and administer. Furthermore, it gives the respondents adequate time to respond to the items, and offers a sense of security (confidentiality) to the respondents, (Kumekpor, 2002). The questionnaire was divided into different sections based on the research objectives. **Part A** of the questionnaire solicits information about Information Technology application in human resource administration, **Part B** seeks for information about the application of Information Technology in physical resource, **Part C** solicits Information Technology application in financial administration, while **part D** examines the challenges faced by school administrators in the application of Information Technology in school administration and management. The variables used in this section include application of Information Technology in human resource management, Information Technology and physical resource administration and Information Technology and financial administration.

3.6.2 Interview for Principal and Headmasters

Interview was used to collect data from Headmasters and principal. This instrument was considered appropriate in this study because it enables the researcher to achieve higher cooperation and lower refusal rates; it offers high and accurate responses, takes advantage of interviewer presence and gives multi-methods data collection, (Owens,

2002). Questions in the interview guide consist of both closed and open-ended questions. All questions aimed to seek for information about the application of Information Technology in school administration in human resources, physical resources and financial resources.

3.7 Validity and Reliability of Research Instruments

3.7.1 Validity of the Instruments

Validity of research instruments refers to the degree to which evidence and theory support the interpretation of test scores inevitably entailed by use of tests, (Chava & David, 1999). It can as well be explained as the extent to which the research instrument measures what it is supposed to measure, (Mugenda & Mugenda, 1999), define Validity as the accuracy and meaningfulness of inferences which are based on the research results. It is the degree to which results obtained from the analysis of the data actually represent the variables of the study.

The researcher validated the research instruments in terms of content and face validity. Content and face validity were used by (Mue, 2014) and were proven to yield excellent results. Also, the researcher consulted experts after the questionnaires and interview guide were constructed. This was done to seek for advice about the items on the instrument to determine if they accurately represent the variables under study. Recommendations were made and the items were reviewed before they were finally administered.

3.8 Data Collection Procedures

Data for this study was collected using self-administered questionnaire and semi-structured interviews as the research instruments. The researcher personally went to the various public Senior High/Technical Schools to meet the Headmasters with the questionnaire to be administered. The researcher briefly introduced himself to the Headmaster/Administrators with the view of seeking permission to collect data for the study. Once this was done, the questionnaires were given out for the respondents to respond. The completed questionnaires were subsequently collected, and where not possible, arrangements were made to collect them on a later date. After that, the researcher made a schedule with the respondent again for an interview. The interview was conducted in a very interactive manner, and participants were being assured of confidentiality and privacy of the information provided.

3.9 Data Analysis Procedure

The collected data was analyzed using both quantitative and qualitative data analysis approaches. Quantitative approach was used to describe and display the results using simple frequencies, percentages, tables and figures. On the other hand, qualitative data was presented based on narrative, and integrated with the quantitative data. These data formed the basis of discussion in the available related literature review. Both quantitative and qualitative data were derived from the questionnaires and interview data gathered from the school Headmasters and principals which covered information from the following areas: application of Information Technology in human resource administration and management, Information Technology and physical resource administration and management, Information Technology application in financial administration, and measures that can be taken to improve the application of Information Technology in school administration and management.

3.10 Ethical Considerations

In this study, the confidentiality and privacy of the research participants were ensured. All ethical principles governing research participants were strictly followed. Responses from research participants were voluntary and not coercive. Participants were also made to know that their privacy and confidentiality were guaranteed. They were also informed of the principle of anonymity. Thus, participants were remained anonymous throughout the study.

CHAPTER FOUR

DATA ANALYSIS AND PRESENTATION OF FINDINGS

4.1 Introduction

This chapter presents data analysis, presentation, interpretation and discussion of findings on the application of IT in the administration and management of public senior high/technical schools in the Upper West Region. The data was analyzed with the help of a computer program, SPSS version 16.0. This enabled the research data to be presented in frequencies, percentages, tables and figures. It is subdivided into the following sections: IT application in Human resource administration, Application of IT in physical resources management, application of IT in Financial Administration, Challenges facing application of IT in school administration.

4.2 Information Technology Application in Human Resource Administration

This study was set out to find out school administrators apply IT in human resource administration in public senior high/technical schools in upper west region. In order to achieve this objective, the section is put into a number of sections. These include: The availability of computers for use by administrators, whether IT is use to manage non-teaching staff, areas that IT is applied inhuman resource management in schools, who supervises the application of IT, policies on IT application in human resource management practice and the rate at IT is applied in the administration of human resources in schools.

Table 1: Do you have computers that you use for the administration and management of human resources.

		Frequency	Percent	Valid Percent
Valid	yes	120	100	100

Source: Field Data, 2019

From the table above, the respondents were asked to indicate whether they have computers that they use in performing their administrative duty. It is instructive to note that all the participants, that is 120 people responded in the affirmative. This indicate that most schools have access to computers that they can use for basic functions.

Table 2: Do you also use information technology to manage the non-teaching staff in your school?

		Frequency	Percent	Valid Percent
Valid	Yes	96	80.0	80.0
	No	24	20.0	20.0
	Total	**120**	**100.0**	**100.0**

Source: Field Data, 2019

From the findings on the table above, majority of the respondents 96 participants representing 80.0% indicates that they use information technology to manage the non-teaching staff in their schools by choosing 'Yes' while 24 respondents also chooses 'No' representing 20.0% indicating that they do not use information technology in managing the non-teaching staff. Out of the 96 respondent who said yes, 36 respondents representing 30.0% used IT in monitoring their daily attendance whilst 60 respondents representing 50.0% used it in keeping their personal records.

One person however did not answer the question indicating that he/she may not have adequate publicized knowledge on the use of such technology.

Table 3: If yes, how

		Frequency	Percent
Valid	Monitoring their daily attendance	36	30
	keeping their personal records	60	50
	Total	**96**	**80**
Missing	System	24	20
Total		**120**	**100**

Source: Field Data, 2019

From the preceding question, the respondents were further asked to indicate the area information technology was applied having said YES. Out of the total 96 respondents, 60 of them representing 50.0% indicated they use IT in keeping personal records of staff while 36 of the remaining representing 30.0% also indicated that they use it in monitoring daily attendance of staff.

Table 4: Areas that IT is applied in human resource management in schools

		Frequency	Percent	Valid Percent
Valid	Teacher Training	66	55	100
Missing	System	54	45	
Total		**120**	**100**	
Valid	Staff recruitment	46	38.3	100
Missing	System	74	61.7	
Total		**120**	**100**	
Valid	Evaluating teacher's performance	37	30.8	100
Missing	System	83	69.2	
Total		**120**	**100**	
Valid	E-learning	62	51.7	100
Missing	System	58	48.3	
Total		**120**	**100**	
Valid	None of the above	6	5	100
Missing	System	114	95	
Total		**120**	**100**	

Source: Field Data, 2019

From the findings, it may be noted that 66 participants representing 55.0% of all the participants indicates that information technology is applied in training of teachers, 62 participants representing 51.7% says information technology is used in E-learning, 46 people representing 38.3% indicates information technology is use in staff recruitment, 37.8% of them says information technology is use in evaluating teachers performance. However, 6 people representing 5.0% were of the view that information technology could be used in other areas other than what was stated above. These findings are aligned with an earlier study conducted by (Mtanga, Imasiku, Mulauzu & Wamundila, 2012), use of ICT in Education. From the table, the missing system refers to those participants who did not choose those particular options as indicated.

Table 5: Who supervises or monitors the application of IT in Human Resource Administration in your school

		Frequency	Percent	Valid Percent
Valid	HOD for ICT	74	61.7	100
Missing	System	46	38.3	
Total		**120**	**100**	
Valid	Assistant head/Vice principal Academic	79	65.8	100
Missing	System	41	34.2	
Total		**120**	**100**	
Valid	Assistant head/Vice principal Administration	34	28.3	100
Missing	System	86	71.7	
Total		**120**	**100**	
Valid	Headmaster/principal	74	61.7	100
Missing	System	46	38.3	
Total		**120**	**100**	

Source: Field Data, 2019

From the table above, 79 respondents representing 65.8% of the participants stated that Assistant heads academic/vice principal academic supervises IT application, 61.7% of the respondents think both the Headmaster or Head of department for ICT does the supervision and 34 people representing 28.3% also indicating that the supervision is been carried out by Assistant head/Vice principal administration.

Table 6: Which of these areas do you apply IT in the administration and management in your school

		Frequency	Percent	Valid Percent
Valid	Students enrollment	104	86.7	100
Missing	System	16	13.3	
Total		**120**	**100**	
Valid	Students performance records	83	69.2	100
Missing	System	37	30.8	
Total		**120**	**100**	
Valid	Teachers personal records	83	69.2	100
Missing	System	37	30.8	
Total		**120**	**100**	
Valid	Teachers absenteeism	18	15	100
Missing	System	102	85	
Total		**120**	**100**	
Valid	None of the above	3	2.5	100
Missing	System	117	97.5	
Total		**120**	**100**	

Source: Field Data, 2019

Majority of the respondents (86.7%) who participated in the study indicated that the area where school administrators apply IT is mostly in the area of students' enrollment records. In terms of students performance records and teachers personal records keeping, 69.2% of the participants agreed that administrators apply IT. Furthermore,

15.0% of the respondents also states that apart from students enrollment, students performance records and teachers personal data keeping, IT is also use in monitoring teacher absenteeism. On the other hand, 2.5% of Stated otherwise.

Table 7: Are there any policy in the school that require mandatory application of IT

		Frequency	Percent	Valid Percent
Valid	Yes	80	66.7	66.7
	No	40	33.3	33.3
	Total	**120**	**100**	

Source: Field Data, 2019

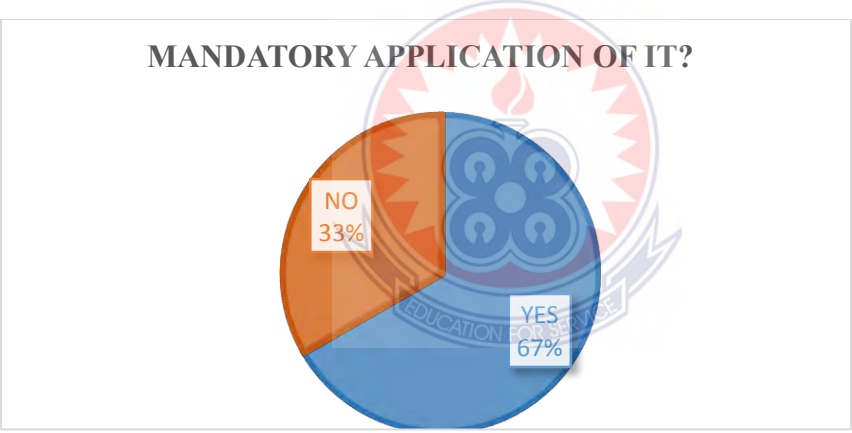

Figure 2: Mandatory application of IT

The respondents were asked to indicate whether there were any policies in the schools that require the application of IT in human resource management. Majority of the participants representing 66.7% indicated that the schools did have a policy which facilitated the application of IT in human resource management in their various schools. However, 33.3% said no such policy exist in their school. This finding coincides with an earlier study by (Bradford & Kalusopa, 2005), which observed that lack of clear national information policy affected the utilization of ICT.

Table 8: How would you rate the application of IT in Human Resource management of the teaching, non-teaching staff and students in the school?

		Frequency	Percent	Valid Percent
Valid	Poor	9	7.5	7.5
	Average	82	68.3	68.3
	Good	29	24.2	24.2
	Total	**120**	**100**	**100**

Source: Field Data, 2019

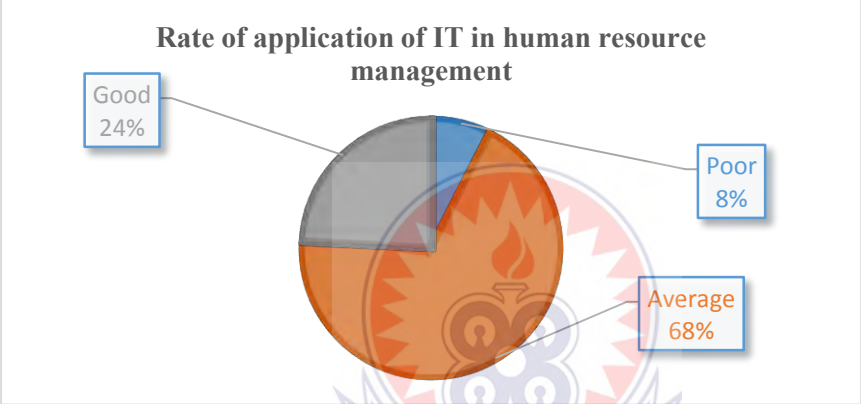

Figure 3: Rate of application of IT in human resource management

The participants were asked to indicate the rate at which IT is been applied in human resource management in their institution. A vast majority of them (68.3%) says IT is averagely applied, 24.2% of the respondents rated IT application in their school as good while 7.5% of them says the application of IT on human resource management in their school was poor.

4.3 Application of Information Technology in Physical Resource Management in Schools

The application of Information Technology in physical resources do have various roles, ranging from keeping of records of the physical resources that are available to the school to procurement practices of obtaining the required resources available for

effective teaching and learning practices of the school (Cheryl W. H., 2005). This study was set to determine the application of Information Technology in administration of physical resources in public Senior High/Technical schools in the Upper West Region.

Table 9: Which of these areas do you use IT in the administration of Physical resources in your school

		Frequency	Percent	Valid Percent
Valid	Books	87	72.5	100
Missing	System	33	27.5	
Total		**120**	**100**	
Valid	Classroom facilities	90	75	100
Missing	System	30	25	
Total		**120**	**100**	
Valid	Lab facilities	99	82.5	100
Missing	System	21	17.5	
Total		**120**	**100**	
Valid	Kitchen facilities	17	14.2	100
Missing	System	103	85.8	
Total		**120**	**100**	

Source: Field Data, 2019

The respondents were asked to indicate whether IT has been applied in the various administration of activities such as books, classroom facilities, kitchen facilities and lab facilities. The results indicate that 82.5% of the participants use IT for management of Lab facilities that includes computers, 75.0% affirming the use of IT in managing classroom facilities, 72.5% also indicating the use of IT in managing books while 14.2% affirm the use of IT in managing the kitchen facilities in school. Other area that was also pointed out as one area that schools also use IT in managing is in the area of Sports facilities/equipment. Thus, schools use record management application systems such as MS-Word and MS Excel in keeping their records.

Table 10: How effective is the application of IT in the administration of physical resource?

		Frequency	Percent	Valid Percent
Valid	Very effective	26	21.7	21.7
	Effective	83	69.2	69.2
	Not effective	11	9.2	9.2
	Total	**120**	**100**	**100**

Source: Field Data, 2019

As shown by the table, 83 participants representing 69.2% indicated that the application of IT in the administration of physical resources in senior high/technical schools was effective, 21.7% of the respondents said IT is applied in a very effective way in managing the physical resources. However, 9.2% of the respondents believe it is not been applied effectively.

4.4 Application of Information Technology in Financial Administration

The application of Information Technology is considered a very useful tool to curb the various challenges faced when it comes to financial transactions. Moreover, Bertot, Jaeger and Justine (2010), indicates that the application of ICT offers a wonderful potential for increasing school accountability, transparency and participation among various stakeholders.

The school heads/principals were asked whether they use any accounting management system. In response, most of them explained that they had accounting system. They however went ahead to explain that it was only been used by the school accountants.

In Anamuah-Mensah (2009), the impact of ICT upon local development and digital inclusion for small and medium business observed that the use of computer applications was useful in accounting and financial control. Based on the findings, most of the public

senior high/technical schools utilized Information Technology when it comes to keeping records of fees and salary payment vouchers, other expenditures incurred by the schools for audit purposes.

Furthermore, it has been noted that the application of Information technology has the potential of empowering the stakeholders in the civil society, the government cycles and the wider population to obtain better results in transparency and anti-corruption fight. To this end, this study sought to find out the areas that ICT is applied, who are the key actors and how effective ICT is applied in financial administration in senior high/technical schools in the Upper West Region, Ghana.

Table 11: How do you apply IT in the financial administration processes in your school?

		Frequency	Percent	Valid Percent
Valid	Preparation of school budgets	64	53.3	100
Missing	System	56	46.7	
Total		**120**	**100**	
Valid	Record keeping	114	95	100
Missing	System	6	5	
Total		**120**	**100**	
Valid	Accounting	100	83.3	100
Missing	System	20	16.7	
Total		**120**	**100**	

Source: Field Data, 2019

The respondents were asked to show the how areas that they apply IT in financial administration. As shown in the table above, 95% of the participants said IT is used in the area of record keeping, 83.3% indicated they use IT for accounting purposes while 53.3% also prepare their schools budget using IT.

A further finding by Cheryl (2005), noted that ICT was found to be applied in administration of physical resources through online procurement, advertisement and transactions. This is in consonance with findings that a good number of respondents also indicated that apart from record keeping, accounting and preparing school budget, they also use information technology to prepare tender documents, procurement documents and running adverts on their websites that market their schools and the courses they offer to the outside world.

Table 12: Key players in the application of Information Technology Financial Administration

		Frequency	Percent	Valid Percent
Valid	Account	115	95.8	100
Missing	System	5	4.2	
Total		**120**	**100**	
Valid	Store keeper	65	54.2	100
Missing	System	55	45.8	
Total		**120**	**100**	
Valid	Matron	37	30.8	100
Missing	System	83	69.2	
Total		**120**	**100**	
Valid	Principal/Headmaster	95	79.2	100
Missing	System	25	20.8	
Total		**120**	**100**	

Source: Field Data, 2019

As shown in the table above, the key players involved in the financial administration in public senior high school/technical are the accountants/bursars (95.8%) and the headmasters/principals (79.2%). Apart from these two officers mentioned, the store keeper (54.2%) and Matron (30.8%) also helps in the financial administration. Quite

apart from these actors mentioned above, a few of the respondents also indicated that Assistant headmasters and senior house masters also keep financial records with the using Information technology.

Table 13: Effectiveness of IT Application in Financial Administration

		Frequency	Percent	Valid Percent
Valid	Very effective	22	18.3	18.5
	Effective	94	78.3	79
	Not effective	3	2.5	2.5
	Total	119	99.2	100
Missing	System	1	0.8	
Total		120	100	

Source: Field Data, 2019

The respondents were asked to indicate the effectiveness of Information Technology application in financial administration in public senior high/technical schools. This was categorized into very effective, effective and not effective.

From the table, majority of the respondents (78.3%) were positive by indicating that the application of information technology in financial administration in their school was effective, 18.3% said very effective. Only a few of them (2.5%) indicated that it was not effective and 1respondent not sure of any choice.

The Headmasters/Principals had their own notion concerning the extent to which Information technology is applied in the administration of financial resources in schools. When probed further most of them indicated that the application of Information technology in financial administration is mainly used by the school accountants/

bursars. Their reason was that the accountants were mainly in charge of managing all financial transactions in the school.

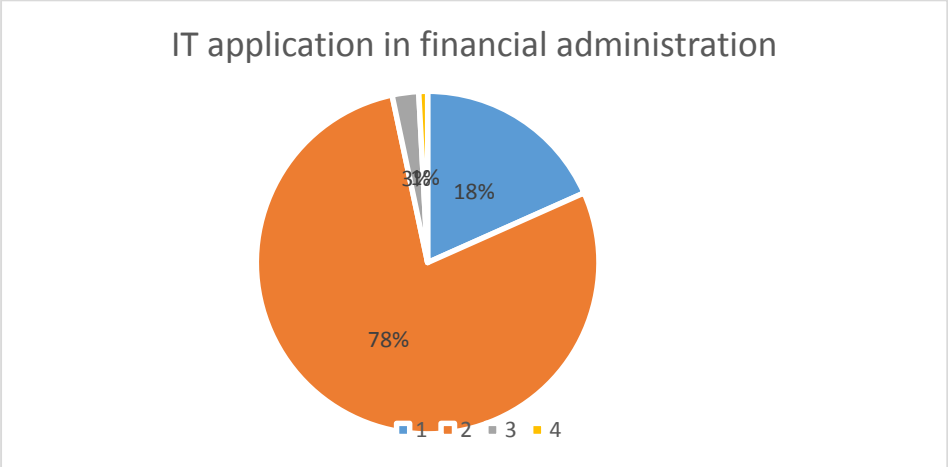

Figure 4: IT application in financial administration

4.5 Challenges Facing Application of Information Technology in School Administration

There are a lot of challenges that hampers the effective application of Information Technology in the school administration. This can be deduced from the previous review sections in this chapter which indicates that Information technology has not been fully utilized in school administration in areas such as physical resources, human resources, and even the financial aspect. Thus, this study set out to identify the challenges that school administrators encounter in the application of information technology in administering the school finances.

Table 14: Challenges facing the application of Information technology in school administration

		Frequency	Percent	Valid Percent
Valid	Insufficient funds	96	80	100
Missing	System	24	20	
Total		**120**	**100**	
Valid	Inadequate number of computers	95	79.2	100
Missing	System	25	20.8	
Total		**120**	**100**	
Valid	Lack of IT personnel	103	85.8	100
Missing	System	17	14.2	
Total		**120**	**100**	
Valid	Lack of power supply	33	27.5	100
Missing	System	87	72.5	
Total		**120**	**100**	

Source: Field Data, 2019

As shown in the table above, there are indeed a lot of factors affecting the effective application of information technology in the overall administration of public senior high/technical schools in the Upper West Region. One of the major challenges as stated by the respondents is inadequate/lack of IT personnel. This represents 85.8% of the respondents. Thus, people who are assigned to perform some task lack the skills required. This is slightly in line with (Bertot, Jaeger, & Justin, 2010), who observed that illiteracy in the application of Information technology to lack of factors such as skills in carrying activities ranging from monitoring, financial administration to reporting teachers or student absenteeism through a simple SMS message. Thus, the people with the technical know-how are not there to carry out certain task that required professional skills. This will definitely affect the application of information technology in school administration.

In terms of finance, 80.0% of the respondents indicated that schools do not have enough funds to enable them fully equip and manage their schools using information technology. This is a major challenge since no institution can ever have enough funds to run its programs, 79.2% of the respondents indicated inadequacy of computers for schools to prosecute their agenda is one of the challenges enumerated since the basic tools needed are the computers.

Furthermore, 27.5% indicated that lack of power/back up supply also hinders the use information technology in school administration.

4.6 Measures that can be taken to Improve the Application of information Technology in School Administration

From the data gathered, it is abundantly clear that there are a lot of challenges affecting the use of information technology in school administration. Thus, a question was posed to the respondents to bring their views to bare in this matter by suggesting measures that can be taken to mitigate these challenges. Some of the suggestions include; provision of computer laboratory, providing more computers, provision of internet facilities to enable schools communicate among, organizing in-service training for school staffs and also training more ICT personnel to take up the challenge.

CHAPTER FIVE

SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

5.1 Introduction

This chapter presents the summary of findings, conclusions and recommendations based on the analysis carried out on the application of Information Technology in school administration in public senior high/technical schools in the Upper West Region.

5.2 Summary

The main purpose of the study was to examine the application of Information technology in school administration in public Senior High/Technical Schools in Upper West Region. The objectives of the study sought to examine: how school administrators apply Information technology in the administration of physical resources, how they apply Information technology in the administration of human resources, how information technology is applied in managing the school's financial resources, the challenges they face in the application information in managing the affairs of schools and measures that can be taken to improve the application of ICT.

The study employed a survey research design. Simple random sampling and purposive sampling methods were used to arrive at the sample (Headmasters/Principals, Assistant Headmasters/Vice principals, accountants/bursars, matrons, senior housemasters/ mistresses, administrators and store keepers). The total sample size was one hundred and twenty (n=120). The response rate was 99%. Questionnaires were used to gather data from the respondents. Some headmasters/Principals were also interviewed in some cases in addition to the questionnaires.

The data gathered were analyzed using descriptive statistics, that employs both quantitative and qualitative approaches. Data from questionnaires were analyzed using quantitative method and presented in frequencies and percentages. However, the information collected through interviews conducted was analyzed qualitatively. They were synthesized to form a presentable data and key points that emerged were reported in a narrative form based on the key themes.

From the analyses, the following key findings were made:

5.2.1 Application of Information Technology in human resource administration

From the data analyzed, all the respondents (100%) agreed that Information technology is applied in human resource administration in their schools. The areas applied include but not limited to keeping personal records of staffs, monitoring staff attendance, evaluating teacher performance, staff recruitment, training of teachers, organizing e-learning for students, enrollment of students and students' academic records keeping. Thus, 82 respondents (68.3%) rated the application of information technology in administration of human resources as average, 29 respondents (24.2%) indicated that information technology in human resource administration was good while 7.5% of the respondents also indicated IT application in human resource administration was poor.

With respect to monitoring or supervision on the application of information technology on human resources administration, 65.8% says supervision was done by the assistant headmaster academic/vice principal academic, 61.7% indicated that the supervision is done the headmaster/principal and the head of department for ICT while 28.3% of the respondents indicated supervision is done by assistant head of administration.

5.2.2 Application of Information Technology in administration of physical resources

A greater majority of the respondents indicated that information technology was being used in the management of the school's physical resources.

In terms of Lab facilities, that included computers and their accessories, 82.5% of the respondents affirmed that information technology is applied in taking stock and inventory, 75.0% of the participants confirmed the administration of the school's physical resources using ICT in the area of classroom facilities, 72.5% participants said information technology is used in the administration of physical resources. However, only 17 respondents were positive on the use of information technology managing the school's kitchen facilities.

5.2.3 Application of Information Technology in Financial Administration

With regards to Information technology application in financial administration, this study found that the key players in financial administration in most schools are the accountants/bursars (95.8%) and the headmasters/principals (79.2%) respectively.

In the administration of finances, majority (95.0%) of the respondents indicated that information technology was mainly used in keeping records of financial transactions, 83.3% of the participants also confirmed the use of information technology for accounting purposes (collection of school fees and other payments), slightly more than half of them (53.3%) said it is used in preparing school budgets and other documents of financial nature.

In connection with how effective ICT is being applied in handling the finances of schools, 96.6% of the respondents were positive that it was either very effective or effective. However, only 2.5% indicated that it was not effective. To this end, it is

evidence that information technology as used in the administration of school finances has been effective though not at its best. This was confirmed by headmasters who said the schools used accounting systems but were only been handled by accountants/bursars.

5.2.4 Challenges facing the Application of Information Technology in School Management and Administration

One of the major challenges enumerated by a greater number of the respondents is lack of IT personnel to handle critical issues that required specialized skills set in performing some specific task. About 85.8% of them highlighted this as a major hindrance for the smooth and better application of information technology in school administration.

Additionally, 80.0% of the participants also contended that insufficient funds to enable them acquire some IT infrastructure like internet (data bundle) to enhance their work was yet another important factor affecting the application of Information technology in school administration in public senior high/technical schools in the Upper West Region. Furthermore, for one to apply information technology successfully in any field of our life, the availability of computers which are the basic tools cannot be over emphasized. To this end, the non-availability or inadequacy of the have a dire effect on whatever job that needs to be done. Thus, 79.2% of them stated this as a challenge that some school still encounter.

Another challenge indicted by a section of the respondents have to do power supply. About 27.2% of the indicated that lack of backup power supply also hinders the application of Information technology since these tools largely depend on power to operate. It has therefore emerged that the key challenges as reported by heads of schools

included financial constraints, inadequate trained personnel, inadequate computers, lack of backup power systems among other things.

5.3 Conclusion

Following the analysis, discussion and summary of the findings, the following conclusions can be drawn:

Most public senior high/technical schools have adopted the use of Information technology as a good tool in their day to day operations. In the area of human resource administration, IT is applied in monitoring attendance of staffs, keeping of personal records of both staffs and students, e-learning, training of teachers in basic applications such as students reports compilation, students' enrollment during admission. However, these are not without challenges that made their application not that effective resulting in yielding small outcomes.

It may also be concluded that public senior high/technical schools in Upper West Region do apply information technology in physical resource administration to some extent. It has been used in monitoring areas as books, classroom facilities, lab facilities and kitchen facilities. However, it could have been extended to monitor many other areas including but not limited to sports facilities and others.

School administrators also apply IT in the financial administration of their school different ways. They include preparation of school budget, records keeping, fees collection and preparing tender documents. Hence, the key actors involved in the application of IT in financial administration are the accountants/bursars and headmasters/principals.

The application of information technology in the administration and management of public senior high/technical schools is faced with a number of challenges. Some of these challenges include but not limited to lack of trained IT personnel, insufficient funding, inadequate number of computers and lack of backup power supply. These challenges have made the application of IT by administrators in their day-to-day operations as effective as it should be.

5.4 Recommendations

Based on the findings, summary and conclusion, the following recommendations may be proposed to:

5.4.1 School Management

1. Since lack of or inadequate facilities greatly affects the application of IT in school, management can write proposals to Old Students Associations, Non-governmental organizations and opinion leaders of communities in which the school is located to seek for support. They can also fall on Parent teacher Association and other stakeholders for their support.
2. The school administration should adopt a resource management practice so that the limited resources available are being put into full and effective utilization at all times taking into consideration that resources will always be limited.
3. Headmasters/principals can invite other resource persons to regularly offer in-service training to their staff in order to catch up with technological advancement.
4. Schools can adopt their own local ICT policies in conformity with government policy thereby making it mandatory for all.

5.4.2 Government and Policy Makers

1. Government through the ministry of education or its agencies should implement a project that all public senior high/technical schools are provided with current ICT equipment and software to meet the challenging needs current technology.
2. Government should invest in training enough IT personnel with technical know-how for deployment to fill the gap.
3. Government through ministry of education or her agencies should organize in-service training for staffs at regular intervals.

5.5 Recommendation for Further Studies

1. A further study should be done to investigate the impact of application of information technology on the performance of public senior high/technical schools.
2. I Further recommend that similar research could be conducted in other regions

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APPENDICES

QUESTIONNAIRE

Dear Sir,

I am a student pursuing a master's programme at the University of Education, Winneba. As part of the programme requirement, I am conducting a research on t*he "The Use of Information Technology in Administration in Public Senior High/Technical Schools in Upper West Region.*

I would like to assure you that all the information you provide will be used strictly for academic purposes only and as such, will be kept confidential.

A. Information Technology Application in Human Resources Administration

1. Do you have Computers that you use for the administration and management of human resources?
   a. Yes [ ]
   b. No [ ]
2. Do you also use information technology to manage the non-teaching staff in your school?
   a. Yes [ ]
   b. No [ ]
3. If yes, how?
   a. Monitoring their daily attendance [ ]
   b. Keeping their personal records [ ]
   c. Others [ ] please specify……
4. Which of these areas is IT applied in Human Resource management in the school?

Please tick all that apply

a. Teacher Training [ ]

b. Staff recruitment [ ]

c. Evaluating teacher's performance [ ]

d. E-learning [ ]

e. None of the above [ ]

5. Who supervises or monitors the application of IT in Human Resource Administration in your school?

a. Headmaster/Principal [ ]

b. Assistant head/Vice Principal Administration [ ]

c. Assistant head/Vice Principal Academic [ ]

d. HOD for ICT [ ]

6. Which of these areas do you apply IT in the administration and management in your school?

a. Students enrolment [ ]

b. Students performance records [ ]

c. Teachers personnel records [ ]

d. Teachers absenteeism [ ]

e. None of the above [ ]

7. Are there any policies in the school that require mandatory application of IT?

a. Yes [ ]

b. No [ ]

8. How would you rate the application of IT in Human Resource management of the teaching, non-teaching staff and students in the school?

   a. Poor [ ]

   b. Average [ ]

   c. Good [ ]

B. Application of Information Technology in Physical Resources in Schools.

Please tick all that apply.

9. Which of these areas do you use IT in the administration of physical resources in your school?

   a. Books [ ]

   b. Classroom facilities [ ]

   c. Lab facilities [ ]

   d. Kitchen facilities [ ]

   e. Others [ ] Please specify……

10. How effective is the application of IT in the administration of physical resource in your school?

    a. Very effective [ ]

    b. Effective [ ]

    c. Not Effective [ ]

C. Application of Information Technology in Financial Administration in Schools

11. Please, how do you apply IT in the financial administration processes in your school? Please tick all that apply.

    a. Preparation of school budgets [ ]

    b. Record keeping [ ]

c. Accounting [ ]

d. Others [ ] Please specify……

12. Who are the key players in the application of IT in financial administration in your school? Please tick all that apply.

a. Accountant/Bursar [ ]

b. Store keeper [ ]

c. Matron [ ]

d. Principal/Headmaster [ ]

e. Others Please specify [ ] …….

13. How effective is the application of IT in the financial administration in your school?

a. very effective [ ]

b. effective [ ]

c. not effective [ ]

D. Challenges Facing Application of Information Technology in School Administration

14. What are some of the challenges facing you in the Application of IT Administration in your School?

Please tick the appropriate ones

a. Insufficient funds [ ]

b. Inadequate number of computers [ ]

c. Lack of IT personnel [ ]

d. Lack of power supplies [ ]

e. Others. Please specify [ ]……

15. What measures do you think can be taken to improve the application of IT in the school administration?

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