UNIVERSITY OF CAPE COAST

STUDENTS' INFORMATION SYSTEM USAGE AND SATISFACTION AMONG SCHOOLS IN CAPE COAST METROPOLIS

SAMUEL MINTAH

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BY

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Dissertation submitted to the Department of Mathematics and ICT Education, College of Education Studies, University of Cape Coast, in partial fulfilment of the requirements for the award of Master of Education degree in Information Technology

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DECLARATION

Candidate's Declaration

I hereby declare that this dissertation is the result of my own original research work and that no part of it has been presented for another degree in this university or elsewhere.

Candidate's Signature:…… Date:……..

Name: Samuel Mintah

Supervisors' Declaration

I hereby declare that the preparation and presentation of this dissertation were supervised in accordance with the guidelines on supervision of dissertation laid down by the University of Cape Coast.

Supervisor's Signature: ……. Date: …….

Name: Dr. Bernard Wiafe Akaadom

ABSTRACT

This research investigated the Free SHS Student Information System usage and its' satisfaction among schools in the Cape Coast metropolis. The study employed a descriptive survey design which helped to collect both quantitative and qualitative data and also analyzed both quantitative and qualitatively. The targeted population of this study constituted teachers from Senior High Schools in the Cape Coast Municipality and ICT administrators. A sample of teachers and ICT administrators were selected for this study using a proportional stratified random sampling and purposive sampling respectively. The data collected were analyzed using means, standard deviation, frequency percentage and one-way ANOVA. The research showed that the Students Information System (SIS) helps teachers easily enter their students' scores and teachers can open their portal as a form master or mistress to give comments on their student's performance. However, they indicated that they find it difficult when they want to upload scores on Microsoft Excel onto the SIS. Since the study revealed that teachers find it difficult when they want to upload scores on Microsoft Excel onto the SIS, it is suggested that ICT coordinators and managers of the selected schools should organize workshops or training for the users of the SIS to equip them utilize the SIS. Furthermore, it is concluded that the teachers disagreed with the fact that the Students Information System (SIS) is error-free because their challenges as far as the SIS is concerned have not been met. It is concluded that regardless of the schools where the respondents find themselves, the users of the SIS experience diverse challenges. Finally, even though the users of the SIS have the same system yet different satisfaction exist because of individual attitudes and desires towards the use of the system.

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DEDICATION

To my children, Francis Twum Mintah and Gracelyn Twum Mintah.

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CHAPTER ONE

INTRODUCTION

Background to the Study

Information is a collection of data that has been transformed such that it is intelligible to its intended audience. Basically, information is raw facts that has been organized and given meaning (Kumar, 2006).On the other hand, a system is a collection of dissimilar but organized and co-dependent pieces that cooperate to achieve a shared objectives, and so a collection of elements working toward a common goal (Gabriel, Khalighi, Bourennane, Léon, & Rigaud, 2013). Overall, the act of gathering, analyzing, storing, and transferring important information to support decision-making in any company is referred to as management information systems (MIS) (Laudon & Laudon, 2011). Similarly, MIS is a system for changing data from interior and exterior sources into information and communicating that information in a timely and effective manner to managers at all levels (Ajayi & Omirin, 2007).

Educational organizations and other institutions worldwide continue to embrace the usage of Information and Communication Technology (ICT) in their organisations. This is because of the need to achieve efficiency and effectiveness in managing information. Kumar (2006) expresses that Management is the method used to plan, organize, launch, and evaluate an organization's activities. Similarly, management was described as the method of utilizing strategies and techniques to effectively and efficiently utilize an organization's resources in order to attain specific objectives (Ottih,Salihu, & Okpani 2018).

Management Information Systems (MIS) are employed by a variety of institutions to back up a range of administrative activities such as to monitor attendance, keep records of assessments, report, finance management, also to allocate resources and personnel (Obi, 2003). MIS gives managers with the data needed to efficiently and effectively manage institutions. Its fundamental goal is to create and put into practice methods, routines, and processes that provide comprehensive reports on time, consistent and accurate manner. According to Gabriel (2012), in the field of management, MIS is critical, in determining a plan of action and carry it out to bring the system under control. MIS is also essential in non-programmed decisions as well, as it promotes the search for analysis, assessment, and implementation phases of the decision-making process by providing information (Obi, 2003). These systems can give workers with source data, logical approaches, real-time updates, and hypothetical situations to help them make better decisions.

Again, administrators and teachers can use MIS to get the information they need to make informed choices regarding planning, policy making, and assessment (Bober, 2001). However according to Gurr (2000), these procedures can help the school administrator establish the school's objectives, develop tactical ideas, allocate capitals, evaluate staff performance, then determine organizational success.

In Africa, several countries have acknowledged the need of providing technical assistance to teachers in order to help them employ ICT in the class (Yang & Wang, 2012). Also, in the usage of ICT in teaching, teachers' willingness and ICT competence is crucial (Agbatogun, 2012). Teachers must possess good levels of ICT competence of self-assurance to use technology in

the classroom (Hatlevik, 2008). Furthermore, teachers must comprehend the pedagogical intent of ICT in order to use it successfully in their educational process. Winzenried, Dalgarno, and Tinkler (2010) claim that teachers who have taken an ICT course are better at using technical tools in their classrooms than those who have not. They went on to say that teachers who did not have enough self-assurance in themselves avoided using ICT.

Warwick and Kershner (2008) claim that schools had applied a variety of methods to deliver extra skilled development for teachers beyond primary skills training. They assert that teachers need to understand the value and advantages of ICT in order to give an effective lesson using ICT (Warwick & Kershner, 2008). The addition of ICT in the classroom is gaining more grounds as it helps students in emerging cross capabilities that encourage communication, problem-solving, independence, and responsibility, and the capability for reflection and creativity, in addition to improving their cooperative learning techniques. These are all critical principles for students to understand in a dynamic teaching and learning environment process (Ghavifekr, Razak, Ghani, & Tengyue, 2014).

Early with in 1970s, the Malaysian government started incorporating ICT into the teaching and learning activities. This is because of the significance of the technological literacy that generated critical-reasoning employees who are competent of facing and contributing in the world economy (Ghavifekr, & Yue, 2018). Accordingly, computer lab, internet connection, smart whiteboards, LCDs, and other ICT tools and equipment were installed in many schools. Malaysia's Ministry of Education in October 2011 initiated a comprehensive evaluation of the public education system. An

updated national education policy was developed by the government to boost instructive values; Education Blueprint 2013-2025 is the current one. This plan sets out a policy for Malaysia's instructive scheme to undergo long-standing development until 2025 (Harris, Jones, Adams, & Cheah, 2019). The plan to upsurge the role of ICT in the whole instructive scheme is also included in this document. The Blueprint proposed eleven operational and strategic shifts to fulfil the transformation mission. The 7th shift mentions ICT, which calls for improving excellence learning in Malaysia by giving internet admittance and a computer-generated education setting via 1BestariNet to all Malaysian schools by 2013 (Harris, et al, 2019). It confirms that ICT may be used to its full potential for self-guided learning.

Statement of the Problem

The use of ICT in the educational institutions have gained global attention. ICT tools such as MIS has the ability to provide processed data, analytical approaches, real-time updates, and hypothetical situations to help users make more informed decisions (Byaruhanga, 2011). Again, the information that educators and administrators need to make informed choices about planning, policy, and evaluation may be provided by MIS. (Bober, 2001). Additionally, Gurr (2000) claims that these techniques can help the school management determine the institution's objectives, create strategic plans, allocate resources, and evaluate the performance of the personnel and organization. (Maki, 2008).

The use of ICT in many African countries has shown the relevance of technological assistance to instructors and administrators in their work delivery (Yang & Wang, 2012). Also, teachers' desire and knowledge in using ICT are critical in applying ICT in education (Agbatogun, 2012). Similarly, in Ghana, the government has promoted the use of ICT in education as a tool of improving educational outcomes. The Ghana Education Service's Strategic Plans (2003-2015 and 2010-2020) both emphasized the need for ICT in education to achieve the Education Strategic Plan's aims, thus access, quality, gender equality, and inclusiveness, as well as educational management, are all issues that need to be addressed (Mangesi,2007).Consequently, the government has established the ICT for Accelerated Development (ICT4AD) Policy (2003), that stated the diplomacies and policies in an agenda for how ICTs might be used to help Ghana realize its national goal of becoming an ICT literate nation (Government of Ghana, 2003).

Regarding ICT in education in 2009, the Ghana Education Service (GES), which is an agency under the Ministry of Education, published the ICT in Education Policy to match the ICT demands in holistic. Similarly, the introduction of the Basic School Computerization Policy in 2011 with the aim of synchronizing computers and e-learning to cut across the educational framework. Due to this, the Ministry of Education, in union with LG, a Ghanaian ICT business, in 2012 launched the teacher laptop and ICT project, in order to assist them undertake researches, teach, and learn in a range of subject areas. The practice of ICT in teaching and learning is key because it prevents restricted access to relevant information and topic development, with

functional solutions to meet students' individual challenges, including those with special needs (Natia & Al-hassan, 2015).

In the Cape Coast Municipality, an anecdotal document shows that students' information in the various second cycle schools were kept by a school's own database. This practice has existed since 2005 (Ministry of Education, 2008). The government of Ghana under the Free SHS introduced the Students Information System (SIS) where students' information is kept on one database (Ghana Education Service, 2019). In effect, teachers and ICT administrators in the Senior High Schools use the same database in entering, recording and keeping students' results and information. However, it is not known how teachers and ICT administrators are embracing this new database. Are they satisfied using it or facing challenges? In light of this, the researcher studied the use of the Student Information System in Senior High Schools in the Cape Coast Metropolis. The researcher also looked at the satisfaction with using this system.

Purpose of the Study

The goal of this study was to examine the use and satisfaction of the students' information system in SHS in the Cape Coast Metropolis.

Research Questions

The following research questions guided the study:

1. What are the determinants of the usage of the Students' Information System?
2. What are the determinants of the user satisfaction of the Students' information System?

3. What difference exists in the actual usage of the Students' Information System in terms of school category?
4. What difference exists in the user satisfaction of the Students' Information System in terms of school category?

Hypothesis

1. **H_0** There is a no statistically significant variance in the actual usage of the Free SHS Information System in terms of school category.
2. **H_{02}** There is a no statistically significant variance in the user satisfaction of the Free SHS Information System in terms of school category.

Significance of the Study

The information generated by this work would help to reveal the satisfaction teachers derive from the use of Students Information System (SIS) as well as the challenges teachers face in using the SIS. Knowing teachers challenges they face and the satisfaction they derive in using the SIS may help policy and decision makers of Ghana Education Service (GES) to make informed decisions concerning the SIS. Most importantly, since copies would be made available in the library, the study could be a source of reference to add up to what is already known.

Finally, findings from this research would be printed in journals and offered during workshops and conferences to make sure that the information get to all parties in Ghana Education Service (GES).

Delimitation of the Study

This study was delimited to teachers and ICT administrators in the Senior High Schools. This is because teachers are the primary users of the SIS in entering students' results and generating students' reports. While, ICT

administrators are the managers of the system. The study was also delimited to Senior High Schools in the Cape Coast Metropolis because of easy access to information concerning the use of the SIS database.

Limitation

Some teachers who administered the questionnaire could not return them. This made the researcher got access to 306 respondents instead of 313. This could have affected the findings, however, since two respondents each were added to the sampled size as recommended by Krejcie and Morgan (1970) this anomality was catered for. Also, instead of 22 ICT coordinators, only 11 of them made themselves available for the interview. Though, half of the participants made themselves available for the interview saturation was meant. Hence, the size of the participants involved in the research did not have any effect on the study's findings.

Definition of Terms

The definitions listed below were applied for the purpose of this research:

Terms	**Definition**
MIS	Management Information System
SIS	Students Information System
FSIS	Free Senior High School Students Information System
ICT administrators	They are staff in the Senior High Schools who teach
ICT and	also perform administrative duties in the school.
Usage or Use	The intended purpose of the FSIS in the various senior high schools.
System Quality	The usability and efficiency of the FSIS.
Information Quality	The quality of the content and characteristics of the
FSIS	output.

Service Quality	The quality of support rendered by the information system's developers.
School Category	The grouping of senior high schools according A, B, C, etc
GES	Ghana Education Service

Organisation of the Study

The structured of the work was in five chapters. Chapter one looked at background, statement of the problem, purpose, research questions, significance of the study, delimitations, limitations, definition of terms and organisation of of the research. Chapter two emphasized on the theoretical and empirical review of the literature.

The research technique used in the research is described in Chapter three. This includes research design, study area, population, followed by sampling and sampling procedure, data collection instruments, data collection procedures and data processing and analysis. The main focus of Chapter four is the presentation of results and discussion. Summary of findings, conclusions, recommendations and suggestions for further studies are presented in Chapter five.

Chapter Summary

This section presented the background to the research which discussed background issues related to management information system, problem statement, study purpose, objectives of the research, study hypotheses, the study's significance, delimitation and limitations of the study, and how the research is organized.

CHAPTER TWO

LITERATURE REVIEW

The Introduction

The study of this chapter is organized along with the theoretical and empirical review to guide the research. This chapter reviews the factors that determine the usage of the students' Information System and the factors that determine the user satisfaction of the students' Information System in the various SHS in the Cape Coast Metropolis. Again, this chapter reviews the differences that exist in the actual usage of the students' Information System in terms of school category in the various SHS in the Cape Coast Metropolis. Finally, this chapter reviews the differences that exist in the user satisfaction of the Students' Information System in terms of school category in the various SHS in the Cape Coast Metropolis.

Theoretical Framework

This research was directed by the updated DeLone and Mclean's Information System (IS) Success Model (1992). The revised DeLone and Mclean Information System Success Model also provides a unified understanding on Information System success that helps to compare the working systems of the model between and among different users. The DeLone and Mclean Information System Model has been accepted generally for the measurement of information systems success since it has been tested for different parts of information system success. (Khayun, Ractham, Firpo, 2012; Stefanovic *et al.*, 2016).

The various success magnitudes of the revised DeLone and Mclean Information Success Model in more detail and provide an exemplary selection of validated measures below.

Service Quality

According Bahari and Mahmud (2018), service quality is a help of users by the Information System department, normally evaluated by the responsiveness, reliability and empathy of the support organization. Responsiveness is the willingness to aid clients and provide immediate service. Reliability refers to the ability of the firm to deliver the needed service consistently in its rightful manner. Empathy is the capacity the firm has to provide personalized client assisted support with care. Studies have proven that using service quality measures like, guarantee and reactiveness by the systems support department, as well as training and guidance. Also, according to Roses, Hoppen and Henrique (2009) examining the efficacy of Information Technology service mechanisms is becoming progressively important. In this study, quality service was determined by investigating the skill support available for the Free Senior High School Information System and the reliability of the system.

Information Quality

In the updated DeLone and Mclean Information System Success Model quality constitutes the desirable characteristics of an Information System output. According to Rieh (2002) operationally, information quality is information that is good, useful, current, and accurate. This means that information generated by a new developed system should be able to satisfy the qualities outline and should be generated on time. Also, according Widiana,

Wang, Lin and Tsai (2019) note that research in the field of information systems' (IS) success has been well-versed by series of models of which the original DeLone and Mclean information system success model, which was a comprehensive review of different IS models is not an exception. This model has also been measured by analyzing the information system productivity with respect to time, precision, consistency and dependability. This study focuses on the information quality in terms of the perfection, practicality and timeliness of the information produced by the Free Senior High School Information System in use.

System quality

The system quality is meant to check the required features of an Information System (IS). Thus, this IS exhibit certain features that assist the teachers as well as the ICT administers to use the system freely without any difficulty. Several Information System studies (Abdullah, Ward & Ahmed 2016; Mutahar, Daud, Thurasamy, Isaac, Abdulsalam, 2018; Ohliati & Abbas, 2019) evaluated this by applying such traits as alleged simple to apply, system components, response time, flexibility and efficiency of the Information System. However, this study weighed system quality by investigating the Free Senior High School (SHS) Students Information System (SIS) whether it is working to the perfection of the various Senior High Schools in the Cape Coast metropolis.

Use

This aspect of the model measures Information System use, with no exception to, desire to use, frequency of use, self-reported use, and real use. These diverse measures could possibly cause mixed results between use and

other concepts in the DeLone and Mclean model. Considering a situation where there is over rating or under rating of use by heavy and light users respectively when research has found a significant difference between self-reported use and actual use (Collopy, 1996; Payton & Brennan, 1999). This proposes that self-reported usage may be a meagre substitute for actual use of a system. Yet, Venkatesh, et al. (2003), for example, found an important relationship between desire to use and actual usage. Furthermore, one cannot say frequency of use is the only credible means to measure Information System use. King and Torkzadeh (2008) suggest that more use does not necessarily mean that the use is better than the others but the measurement. They created a mechanism to measure use on the basis of effects of use, instead of frequency or time range. Burton-Jones and Straub (2006) have restructured the systems usage construct by infusing the structure and function of systems use. Others, have proposed the need to re-look at us from a multidimensional angle across organizational points and the individual to give a clear meaning of this construct (Burton-Jones & Gallivan, 2007). In this respect, a penitent question is asked about weather, the Free SHS SIS is used for it intended purpose. This study then sought to assess the actual usage of the Free SHS SIS in the senior high schools in Cape Coast metropolis.

User Satisfaction

According to the model, the success dimension of user satisfaction comprises the level of satisfaction of the user when utilizing an Information System. User satisfaction is seen to be one of the utmost vital measures of Information System success. User satisfaction measuring becomes particularly valuable if the use of an Information System is required and the level of use is

also realized as one of the pointers of systems success. Commonly used user satisfaction instruments are the ones by Ives et al. (1983) and Doll et al. (2004). However, these instruments also contain items of system, information, and service quality, rather than only measuring user satisfaction. Consequently, other items have been advanced to solely measure user satisfaction with an Information System. This study then seeks to evaluate the level of satisfaction that the various Senior High Schools have been deriving from using the Free SHS SIS.

Net Benefits

This is also viewed as one of the most significant measures of Information System success and it constitutes the extent to which an Information System adds to the success of different stakeholders, whether good or bad. Some researchers contend that benefits subject to numeric costs are not likely due to imperceptible system impacts and prevailing environmental variables (McGill et al., 2003). Most of the studies applying the DeLone and McLean Information System Success Model measure the benefits of utilizing an Information System on either individual or organizational levels or individual and organizational levels.

Reasons of adapting the DeLone and Mclean IS Success Model

The updated DeLone and Mclean Information System Success Model underpins this study because each of these variables: the quality of the system and service, information quality, use, net benefits and user satisfaction is a composite of numerous and diverse constructs and measures. For instance, System quality measures the required features of an Information System (IS). For example, the researcher used the Free Senior High School Student

Information System (FSIS) as a case to assess its system quality. Thus, this Free Senior High Student Information System exhibits certain features that assist the teachers as well as the ICT administrators to use the system freely without any difficulty. Several Information System studies (Abdullah, Ward & Ahmed, 2016; Mutahar, Daud, Thurasamy, Isaac & Abdulsalam, 2018; Ohliati & Abbas, 2019) have measured the using of characteristics as perceived ease of use, system features, response time, flexibility and efficiency of the Information System. However, this study evaluated system quality by investigative the Free Senior High School (SHS) Students Information System (SIS) whether it is functioning to the exactness of the several Senior High Schools in the Cape Coast Metropolis.

Again, Information quality relates to content issues and features of the Information System (IS) output. For instance, the information a teacher or an ICT administrator in the Senior High School (SHS) can generate will depend on the Students' Information System. Nonetheless, this study measures the result of an Information System in relation to appropriateness, accurateness, dependability, and uprightness. This study also emphasizes on the information produced by the Free SHS SIS qualities in terms of correctness, usefulness, and trustworthiness in the many Senior High Schools in the Cape Coast metropolis.

Further, the Service quality dimension within the success model measures the quality of support rendered by the information system's developers to the users of a developed Information System (IS). This construct is an enhancement of the updated DeLone and McLean Information System Success Model that was not part of the original model. The developers of the

Free SHS Student Information System provide quick support to subject teachers and ICT administrators as they use the system. The DeLone and McLean Information System Success Model underpins this study in that the technical support such as training, hotline, or helpdesk would help to bring to bear the benefits Free SHS SIS give to teachers and ICT administrators within various Senior High Schools in Cape Coast metropolis.

Moreover, concerning intention to use/use dimension, signifies the level and means for making use of an Information System by its users. Meaning that, Information System usage measurement is a vas concept that cannot be looked at from a single perspective. The real use of IS may be the right scale of success in the situation of voluntary use. Past research works measured use empirically by taking the connecting duration, the purposes used, and the rate of use. A detailed strategy for explaining the usage of an Information System is the Technology Acceptance Model (TAM) (Wang 2008). TAM considers the independent variable of perceived ease and usefulness to contribute towards usage attitude, intention to use, and actual use. This is as a result of the complexities in interpreting the dimension use. Intention to use was the proposal made by DeLone and McLean as a substitute measure to use in some situations.

The user satisfaction success dimension constitutes the user's level of satisfaction when utilizing an IS. This level of satisfaction is determined by the eminence of the system being utilized. Here, information produced from the system, and the service that the system is giving to the institution. The value of measuring user satisfaction is very high with a compulsory use of an IS and other indicator of the quantum of use to determine system success. The

satisfaction instruments commonly used by users are the ones indicated by Doll (2004), however, these Doll et al studies encompass system information elements, and service quality, as compared to others which measure only user satisfaction. Concerning this current study, it seeks to find out the level of satisfaction derived by the users with the selected senior high schools.

Finally, the net benefits dimension happens to be one of the very significant IS success measure with the composition needed to contribute to the success of stakeholders in good or bad ways. Some researchers argue that since system effects and intervening environmental elements cannot be touched, benefits that relate to nominal costs are not likely (McGill, Grenier, Kavcic, & Cholewicki, 2003). Majority of the studies using the DeLone and McLean IS Success Model measure IS utility benefit on single and/or organizational level. This study then assesses the level of satisfaction that the individual schools or organizations derive from using the Free SHS Students Information System within the various Senior High Schools in the Cape Coast metropolis.

Conceptual Framework

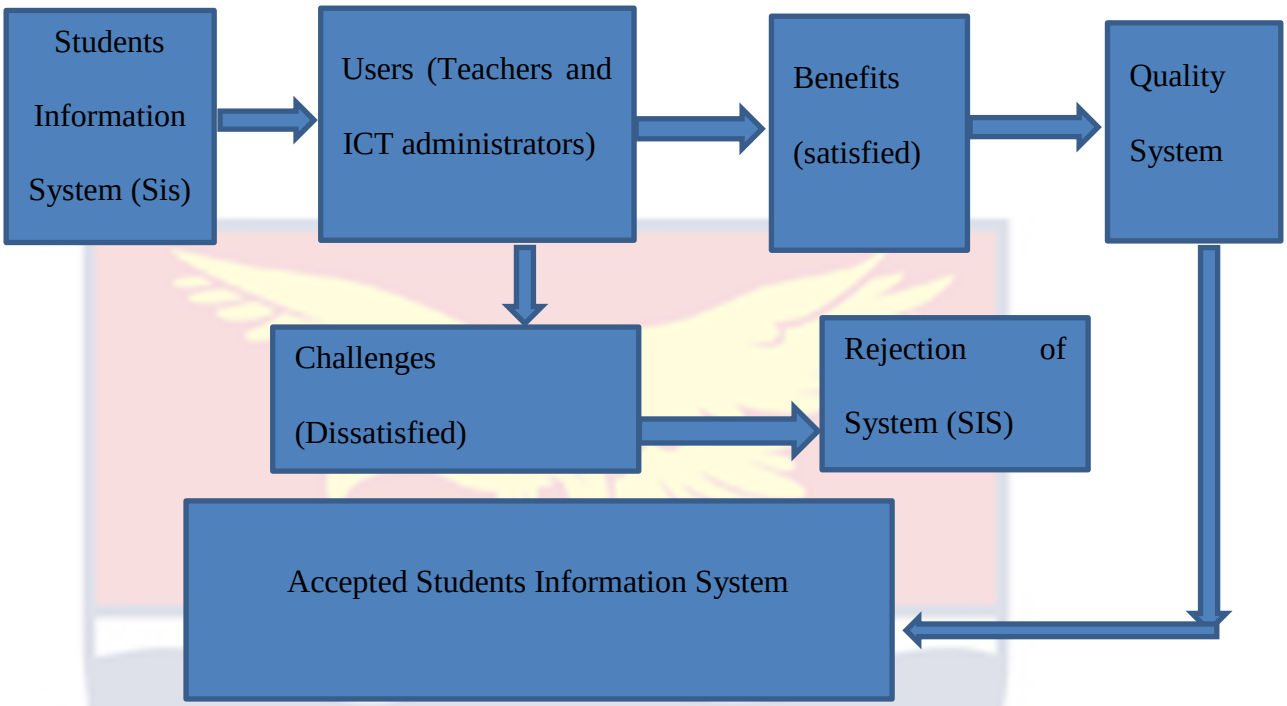

Figure 1: Mintah's Conceptual Framework on Students Information System (SIS).

Source: Author's construct

No developed system can work in isolation. It is therefore developed for users and utilized by them. It can either be accepted or rejected based on its quality of usage. The Students Information System (SIS) is developed for teachers and ICT administrators and same is to be used by heads. Hence, before, the SIS assumes acceptability, it has to be user friendly and a high level of satisfaction by users. However, if the SIS usage is creating problems and challenges it automatically leads to its rejection (Rejection of System). Meanwhile, if the SIS is highly beneficial and satisfactory by users it is considered as a quality system hence acceptance of the Students Information System.

Empirical Review

The researcher at the empirical review stage, related studies, theories and methods used in other researches to explain the Free SHS Students' Information System (SIS) usage and its satisfaction among schools in the Cape Coast metropolis.

Information Systems (IS)

An information system is a collection of events, processes, approaches, knowledge, and individuals that are well informed to get vital related information. A system is said to be best when that system generates useful information that benefits the user at all times. This system by itself should be able to store information before it is needed by the user. It should have the data processing capacity to process data and to respond to its end-users by giving solutions to all problems. Information systems should best interact and communicate with the clients to produce the right information needed (Knight & Sullivan, 2000). Information System is a mechanism that interact to generate information, the elements of the mechanism exclude none of the following to function: hardware, software, data, procedures, and people, (Kroenke, 2007).

These five elements are the main elements of Information System. Hardware describes the actual parts of the computer like keyboards, software is intangible and helps in word-processing. Data and information are action input and output of the computer. According to Kroenke (2007) and Davies (2009), the important role of Information System cannot be said to be communication devices, programs, and computers only, but hardware, software, data, procedures, and people also form part; putting it in other way,

information system means a communication system between people. Besides, Bright and Asare (2019) said, many information systems roles are there in an organization, for example, employees' performance monitoring and evaluation, business transactions processing operation's efficiency advancement, decision support provision, and documentation and communication channels maintenance.

Regarding this study, the emphasis is on the teachers and ICT administrators' level of satisfaction in the usage of the students' information system in the selected schools in the Cape Coast Metropolis.

Factors determining the usage of a new Information System (IS) in an institution

The usage of a new Information System (IS) refers to the actual use of a newly introduced Information System in an organization. Institutions are striving hard to advance their attractiveness by changing the face of the products and services individually and holistic in respect to organizational levels (Naranjo-Gil, 2009). In context of this, data processing abilities are confronted with extra and varied requests, like speed and reliability in organizations. To manage this tactical challenge, organizations create and use additional advance and meaningful Information System. The quick advancing technological innovation in numerous countries, institutions and organizations worldwide is the computer-based information system (IS) (Gonzalez, Gasco & Llopis, 2006).

The concept of measuring usage of an Information System is broad. It covers different dimensions. In the issue of voluntary use, the actual use of an Information System might be a suitable measure of success within an

institution to determine the usage of a new Information System in terms of user acceptance or rejection. The main challenge that seems to be facing information system acceptance in organizations is user acceptance or rejection of the technologies. This study therefore examines the interest of the academic staff in using and accepting a new Information System. This study will help to bring out key factors that necessitated the usage of the new information system adopted for senior high schools especially in the Cape Coast Municipality.

A newly developed Information System (IS) for an institution will be accepted or rejected for its intended purpose if the Information System is devoid of complexities. Complexity from the Microsoft Encarta dictionary (2009) means that the condition of being difficult to analyze, understand or solve. This means that the information generated from the system should be easily understood and analyzed by the potential users of the system. This will help the institution to use the newly developed Information System for its intended purpose within the institution. According to (Lee, 2007) and (Shih, 2007), intricacy had a meaningly negative influence on the purpose of use (Yee, 2007; Shih & Huang, 2009). This study therefore sought to examine how flexible the new system would be and its acceptability.

Hardgrave and Johnson (2003) similarly review an adverse correlation between complexity and Perceived Usefulness (PU). Previous studies have shown very complex outcomes in higher cognitive assignment, anxiety, and lower the user's intention system usage indicates that the difficulty of a system may badly affect a user's behaviour in the use of the system (Sokol, 2011; Chang, Cheung & Cheng, 2008). Employee training also determines actual usage of the newly introduced system. Employee training is a designed

program that is to raise the technical skills, efficiency knowledge, and adding value to undertake particular job in a way that is better.

Burke (2001) proposes that human matters have the chief influence on the procedure of operation and acceptance of information systems argument, due to the attention given to human issues. Training plays an important role in an individual's consistent work development to raise output by providing the necessary information that will aid in achieving aims and developing skills and capabilities. Training of employees in an organization has a greater value in work progress and organization in holistic. Rouibah (2009) proved that training of employee has a clear impact on Perceived Usefulness. This means that employee training stands as a pillar for adopting Information System success fully in an organization. Institutions progressively use end-user training to assist in creating a very competitive productive labour force. Training programs for End-users are usually designed to directly address cases of ease of use and usefulness. Training influences the user's ideas and attitude to the system. Alternatively, training activities raise the user's confidence to use the system.

Organizational support is considered a factor vey necessary in the adoption and the use of a new system within an institution. Organizational support was grouped by Lee (2007) into top management and technological support (Lee, Kim, Rhee and Trimi, 2007). Top management support is the willingness of that administration to deliver needed capitals and the power for the efficient use of information systems, and use within an organization. According to Lusch and Nambisan (2015) defined technological support as the holistic assistance offered to users of the computer and its related component.

This means that such support as well as other supporting needs such as helpdesk need to be provided to these users of the IS so that they can easily use the system without any difficulty. This study would be in the position to find out the kind of training needs that teachers are being taken through toward the use of the new information system.

Factors determining the user satisfaction of a new Information System in an institution

User satisfaction is the degree of satisfaction or benefits that a new Information System (IS) offers to an institution. This is seen to be one of the most imperative measures of systems success, normally measured by the holistic satisfaction derived by the user. User satisfaction as a concept, Shankland et al. (2021) stated that satisfaction was chiefly a cognitive experience created in the mind of the user and due to that it gives intellectual and emotional response. This, means that information system satisfaction is based on the mental development of different levels of the end-users who specifically communicate directly with the Information System. The end users see people who are not practical as opposers to technical designers of Information System. Levy et al. (2006) defines the information system satisfaction as the Information System end-user's total emotional and mental measure of the likeness degree of usage-related enjoyment encountered with the Information System. This also means that the satisfaction of a newly introduced Information System depends on the individual users within the institution who are using the Information System directly such as the subject teachers in the various Senior High Schools. This means that for a user to

develop a degree of satisfaction for a new IS then it should be determined by the worth of the system quality, information and service.

System quality refers to the usability and efficiency of a newly introduced Information System. This measures the required traits of an information system. System quality also defines the "good" qualities of the information system and its characteristics in operating as well. System quality is a measure of the process in converting data into information. It takes in software and data components consideration to measure technical soundness of the system (Azemi, Zaidi & Hussin (2018). System quality also looks at bugs or errors in the system, user interface regularity, simplicity of use, documentation quality, and stability of the program code. According to Petter (2008), Walker and McLean (2008), the satisfaction for a particular type of Information System falls on the quality of the system performance in respect to reliability, simplicity, ease of use, functionality, and other system parameters. Simultaneously, DeLone and McLean (2003) measured the quality of the system in relation to reliability, data quality, flexibility, functionality, portability, ease of use, integration, and importance. It also focuses on the information product instead, and characteristics at the semantic level, that is the success of the information in conveying the intended meaning (Petter & McLean, 2008)

According to Rai and Welker (2002) system quality is perceived as a significant motivational drive for individuals and companies to use their systems to make investment gains and other benefits. This means that there are certain qualities that every user wants a system to exhibit for the system to work efficiently as they use the system in their institutions. Regarding this

current study, the researcher determines the factors needed to increase respondents' satisfaction with the Information System introduced in their various institution. Some examples of system qualities included the understanding of user requirements, significance of the system traits and functions, data and system accuracy.

According to Chen (2016), quality information is good, useful, current, and accurate. Also, Azemi, Zaidi and Hussin (2018) have defined information quality as the degree to which;

1. Evaluation procedures used to make information can stand for the knowledge of the decision maker (information relevance) and
2. the specified approaches have been proficiently applied and outcomes clearly shown (information credibility or reliability).

The above definitions mean that information quality depends on the perception of the user or a client to an institution. Information quality holds a vital part of an information management as it determines the quality of information that comes out and advanced in an organization. The highly produced quality of information can improve the processes that go on within the institution as well as a challenging benefits for the organization. The quality of the information also becomes very important and more satisfying as data gathering and storage in an organization rises with drawing out of data for institutional usage. Regarding this current study, the researcher determines quality of information that the student's information system bring out which are different from other information system used.

Service quality is the testing of the eminence of information system services. This also refers to the quality of support rendered by the information

system's developer. Generally, service quality is a device created to check overall service quality for researchers on the field of marketing. Alzahrani, Mahmud, Ramayah, Alfarraj and Alalwan (2017) enhanced Delone and McLean (2003) to add service quality as part of the elements to prove the effectiveness of an information system. Service quality is a help of users by the IS department, normally checked by the level of response, empathy of the support organization, and reliability (Bahari & Mahmud, 2018). Analysing how effective IT service parts is gaining importance (Roses, Hoppen, & Henrique, 2009). The writers established five magnitudes of service quality that were accepted from Berry et al. (1990). In this current study the research determines the dimensions such as completeness, reliability, responsiveness, assurance, and empathy of the information system.

In relation to completeness, the researcher would examine the Information that is produced from the Information System (IS) that contain the holistic requirement user details. If not, its usability usefulness might not be the basis to make a choice. In reality, the holistic information necessary to make a particular choice should be at hand. Reliability is the capacity to execute the assured service reliably and precisely. Reliability also looks at the presentation credibility and objectivity of the IS. You can only really use information confidently if you are sure of its reliability and objectivity. Responsiveness is the assistance desire to give immediate service. Assurance is the trusting ability of employees to confide in the hope and courtesy. Whiles, empathy is the firm's ability to provide individual customer care.

The difference in the actual usage of a new Information System in terms of schools' categories

Usage of a new Information System refers to how a new information system is used in terms of category. Every institution has its preferences for a particular designed Information system. Therefore, a preferred Information System in an institution may differ from one institution to the other in terms of certain features that pertain to the IS and how the IS functions. Also, anything designed and accepted as project activity becomes tough to put in play due to constant variation in the institution. Besides, absence of ICT policy also adds up to the success or failure of public bodies IS implementation (Heeks, 2002). ICT rules are established to guide the implementation, operation, maintenance and management of ICT resources at the institution.

Odhiambo (2003) for example contended that the absence of ICT policy that brought about the growth of variable webs at Moi University, mean whiles it was implemented; its relevancies are not realized yet. Muniafu (2003) reasons that some universities fail to go through the necessary procedure for ICT procurement. Accordingly, the buying of ICT equipment and software and putting them into practice fail to be on strategic action, because, procurements are not planned. Heeks (2002) well-thought-out that the cause of the failure in developing countries' ICT is as a result of importation and adoption. The acceptance of varying methods and flairs in handling ICT also undesirably affects the quality of Information System services and their execution (Gregory, 2013).

To achieve the quality of information system service infers that institutions need to engage in careful assessment and synchronization of

conflicting managing strategies for active and well-organized formation and service delivery. Taking into action projects sponsored by donors are costs of donor proposals for the construction as compared to the outcome of a calculated information design of a particular institution. Fagerberg and Nelson (2005) stressed that projects introduced by donors normally sustains but the moments the doners rescind their support, the recipients find it difficult to put up plans that will sustain the information system and its facilities moving into the future.

Miozzo and Soete (2001) outlined that disagreeing to agree the fact that the information system plays a key character in the growth of a developing nation has led to the absence of capital and information plans to cut across the sectors in the economy, with no exemption to tertiary educational institutions. In the face of this, they settled that the Information System plans in Kenya's public institutions are donor initiated and funded. Heeks (2002) supported this view by noting that initiatives led donors can be pretty challenging most periods as a result of contradictory goals. Nonetheless, if design divisibility is present, it raises the chances for positive operation, homegrown creativeness, and learning that makes way for adjustments that minimize layout gaps. This layout gaps means that workers could be proactive in subsequent times to address similar emerging issues due to the knowledge gained from past failures on project and practicality to handle project parts. Even though the acceptance and use of Information System in Kenya's public institutions falls in the infant category, its operation must be done carefully in a way that will permit a positive implementation (Ocholla, 2006). Biwott (2017) observed that in the institution, it is the presence of admirable

strategies that are either poorly initiated or not initiated at all. This study therefore centered on the actual usage of the new information system. Thus, its effectiveness in terms of actual usage based on the various schools. Since each school had its own information system before the introduction of the new information system. Again, Concerning, this current study, the information system quality and success model would help to find out if service quality, information quality, and system quality influence behavioral intentions.

The difference in the user satisfaction of a new Information System in terms of school categories

Several factors such as eminence of information systems, information exhibition, that influence usage and propagation of those schemes in institutions. User satisfaction as explained earlier in this chapter is the level of satisfaction or benefits that a new Information System (IS) offers to an institution. This satisfaction may differ from one institution to the other based on the functionality and the data that the new information system offers to the institution. According to Alrayes (2015), meagre data quality can have serious general effect that can also affect the economy. While firms advance data quality with hands-on methods and equipments; efforts to raise focus are firmly severe on accuracy. They also raise views concerning the using of bigger data quality concepts by data users that is recognized by IS professionals. The institution's information system can hold numerous data entry items (Begam, 2015). The more the use of institutional information system, the more critical the cost, difficulty, and quality of the data on which choices are based. (Bayangan-Cosidon, 2016).

Price and Shanks (2004) explained that eminent information and its handling within an institution are essential for satisfactory operations and policy drafting. According to the same study, policy-makers should be distanced from reaching primary sources of data and their related information. Holding the needed requirements and basic skills to comprehend the value of data will contribute to understanding of the effect of data collection decision on decision-making process and to bring up policies that will improve the data quality. (Price & Shanks, 2004). Institutions and organizations that undertake strategic and tactical decisions cannot do away with the quality of data and its collection because of their heavy dependence on the data quality in decision making. Concerning this study, in order to improve decision making to its maximum point, data warehouse has to be increased to gather and link varying data sources. This would be explored to come out with the satisfaction level derived from the new use of the information system (Bharati & Chaudhury, 2004).

The information system quality and success have been of late looked at with diverse approaches. Bayangan-Cosidon (2016) and Alzahrani (2017) considered students' assessments of Students Information System. Bayangan and Cosidon (2016) intend to advance the effectiveness of the existing SIS of Kalinga State University Rizal Campus. To attain this objective, an assessment of the present system was made via investigation and interview techniques from the standpoint of the acting registrar, faculty members, campus secretary, and students. The survey questionnaire was designed based on the features and sub-features of International Organization for Standardization (ISO) Software

Quality Model 9126. The outcomes show that the current SIS match the five necessities: safety, reuse, practicality, functionality, and maintainability.

Chapter Summary

The literature review focused on assessing the free Senior High School management information system usage and its satisfaction of school records among senior high schools in the Cape Coast Metropolis. One issue that came up during the review was that regarding factors determining the usage of a new Information System (IS) in an institution. The acceptance or rejection of a new Information System by users in an organization is one of the main factors that need to be considered. As a result of this, many field researchers studied the attitude of the user in relation to the system and behavioral intention to use, affect the individual. Many computer system impact studies considered user responsiveness. These studies partly looked at the mental reaction of staffs. The strategy is the essence of the modern organization. Clearly, developing, storing and retrieving of information by computer systems has been cost effective for organizations in their operation.

Based on the literature review, it was identified that factors determining the user satisfaction of a new Information System in an institution included satisfaction with Information Systems. Information System has been long used as the subject for more research in the field of Management Information Systems (MIS). User effectiveness is explained as the correctness and comprehensiveness with which workers attain specific objectives. System effectiveness evaluates the degree to which a given Information system achieves its objective. Again, the two features show the system ability to reject unnecessary files and retrieve relevant ones (Van Rijsbergen, 2000). User

effort can be defined in close terms to information searching behavior (Wilson, 2000). Based on the literature review, the difference in the user satisfaction of a new Information System in terms of category includes information-systems implementation and management. Another cluster of information-systems professionals is engulfed in the daily routine activities and management of IT. A computer operator is a person who retains large computers in operation. This person's job is to control the mainframe computers and data centres in organizations. The literature that focused on the differences in the user satisfaction of a new Information System in terms of the category is that trainers of computer conduct a training section for particular computer-oriented capability individuals. For instance, if a new ERP system is being mounted in an institution, one section of the operation process is to instruct on the use of the new system to all staff.

The management information systems functions are essential to the achievement of information systems within the institution. An institution 's information security officer holds power in developing its information security guidelines and checking that they are carried out. The person in charge of an institution's databases is a database administrator (DBA). The purpose of this research is to close this gap by examining the usage and satisfaction of the free SHS management information system with school records in the SHS in Cape Coast Metropolis. The next chapter examined the study's approach and method used in the research.

CHAPTER THREE

RESEARCH METHODS

Introduction

This chapter spells out the methodological approach that was used to carry out the research. The chapter is organized under the following sub-headings: research design, study area, study population, sample and sampling technique, data collection instrument(s), validity and reliability of Instrument, data collection procedure, data processing and analysis, ethical consideration and summary of the chapter.

Research Design

The descriptive survey design has been used for this study. According to Ary, Jacobs and Sorensen (2010), descriptive survey design are crafted to collect data relating to current situation of events or occurrences. Seidu (2012) explains the descriptive survey as the study of standing conditions, main viewpoints, attitudes, routine processes and emerging patterns to get data that can be analysed and understood to raise a statement of the new situation of the case or issue in the research. Descriptive survey design appeared to meet the demands of this study since it describes the issue at hand and cost-effective in gathering data from a greater sample with high data turn over (Kothari, 2004). The idea behind the descriptive survey is to describe the phenomenon of the free shs students' use of information system and its satisfaction among schools in Cape Coast metropolis. A survey design seems to be extra fitting for the research since according to Fraenkel and Wallen (2000), survey research works normally with collecting data to come out with some particular traits of a programme. It is more appropriate to adopt a survey design given the

purposes of the study because Cohen, Manion and Morrison (2008) specify that studies like that take into consideration materials, procedures, institutions, groups and individuals and materials to make it possible for description, comparism, classification, analyses and interpretation of the objects and events that form part of their various fields of inquiry.

Study Area

The research area for the study was the Senior High School (SHS) in the Cape Coast Municipality. The Cape Coast Municipality is sited in the Central regional of Ghana. The Cape Coast Municipal has eleven (11) Senior High Schools. According to the Ghana Education Service and the Cape Coast Basic Statistics (2016), these schools include Ghana National College, Adisadel College, Wesley Girls High School, St. Augustine College, Holy Child School, Ogua SecTech, University Practice Senior High, Mfantsipim Senior High, Effutu Senior High, Academy of Christ the King and Cape Coast Technical Institute. All the schools offer similar programmes with the exception of Cape Coast Technical Institute which is purely technical school.

Study Population

According to Best and Kahn (2006), population refers to "a group of individuals or people that have one or more characteristics in common and are of interest to the researcher" (p.13). The population for this study included ICT administrators and teachers in the various selected senior high schools in the Cape Coast Municipality.

For the purpose of the study, the targeted population included; one thousand, one hundred and fifty-four (1,154) teachers and twenty-two (22) ICT administrators from the selected schools (See Tables 1 and 2). The ICT

administrators and the subjects' teachers were preferred because the ICT administrators have the experience and knowledge in using the SIS in managing school records. Whiles the subject teachers serve as primary user of the database because they record students' marks and also plan students' academic work for the semester using the database.

Table 1- Teachers' Population in the Selected Schools

Name of Schools	No. of Teachers
Ghana National College	150
Adisadel College	98
Wesley Girls High School	103
St. Augustine's College	114
Holy Child School	71
Oguaa Senior Technical	77
Mfantsipim Senior High	147
University Practice Sec	114
Efutu Senior High	88
Academic of Christ the King	77
Cape Coast Technical Institute	115
Total	1154

Source: Extracted from the Schools Basic Statistics (2020)

Table 2- ICT Administrators Population in the Selected Schools

Name of Schools	No. of ICT Administrators
Ghana National College	2
Adisadel College	2
Wesley Girls High School	2
St. Augustine's College	2
Holy Child School	2
Oguaa Senior Technical	2
Mfantsipim Senior High	2
University Practice Sec	2
Academy of Christ the King	2
Efutu Senior High	2
Cape Coast Technical Institute	2
Total	22

Source: Extracted from the Schools Basic Statistics (2020)

Sample and Sampling Procedures

A sample is a population component that the researcher's findings are being generalize on (Cohen, Manion & Morisson, 2007). Taking into consideration the overall purpose, research questions posed, and the research design selected for this research. The sample selected for this study included eleven (11) Senior High Schools, three hundred and thirteen (313) teachers and twenty-two (22) ICT administrators. To begin with, the researcher used purposive sampling technique to choose eleven (11) schools from the Cape Coast Municipality in the Central region and twenty-two (22) ICT administrators (Orji, Madu & Nwachukwu, 2015). This is because the selected

schools use the SIS in managing their students' academic data. Orji, et, al (2015) explained that purposive sampling is not done on pilot or random basis but the researcher makes a choice of a specific sample part and and magnitude which he sees to be good, applicable and suitable for his study (Ary, Jacobs, & Sorensen 2010).

Again, regarding the teachers', proportional stratified sampling technique was employed to select them for the research. According to Ary, Jacobs, and Sorensen (2010), in stratified sampling, you can decide to go in for equal or proportionate samples from each stratum constituting the population. Proportionate stratified sampling was used because the teachers were already grouped in their various schools in terms of program offered and departments. The researcher selected the sample size of teachers in proportion to the population. The sample size for teachers was chosen on the basis of the table for determining sample size provided by Krejcie and Morgan (1970). Krejcie and Morgan recommended that for a population of 1,200 a minimum of 291 respondents should be sampled. Thus, with the population of 1,154 which is closer to 1,200, a minimum of 291 teachers were sampled. However, to ensure reliability of the study, the researcher increased the number to 313. This was to take care of the possibility of some teachers' respondents not responding to the questionnaire. As a result, the researcher added 2 respondents to each school. Hence, twenty (22) respondents were added to the minimum (291) teachers as recommended by Krejcie and Morgan to make the total sample size of 313.

After getting the sample size, the total sample for the various schools was calculated. This was calculated to ensure that they are proportional to the

population in each school and the sample size. In computing the sample for the schools, the sample for each school was denominated by the total population (1,154) and multiplied by the sample size (313). This was to ensure that the sample size was proportionate to the population in each school. For example, to calculate for the desired sample size for teachers in Ghana National College, the total number of teachers 150 was denominated by the grand total teachers' population (1154) multiplied by the sample size (313) which gave the researcher the desired sample (40) (see Table 3). Specifically, the following calculations were done:

Ghana National College is obtained by 150÷1154×313=40.68 or 41

Adisadel College is obtained by 95÷1154×313=25.76 or 26

Wesley Girls High School is obtained by 103÷1154×313=27.93 or 28

St Augustine's College is obtained by 114÷1154×313=30.92 or 31

Holy Child High School is obtained by 71÷1154×313=19.25 or 19

Oguaa Senior Techincal is obtained by 77÷1154×313=20.88 or 21

Mfantsipim Senior High is obtained by 147÷1154×313=39.61 or 40

University Practice Senior High is obtained by 114÷1154×313=30.92 or 31

Effutu Senior High is obtained by 88÷1154×313= 23.86 or 24

Academy of Christ the King SHS is obtained by 77÷1154×313= 20.88 or 21

Cape Coast Technical Institute is obtained by 115÷1154×313=31.19 or 31

Table 3- Teachers Sampled Based on Each School

Name of Schools	No. of teachers Sampled
Ghana National College	41
Adisadel College	26
Wesley Girls High School	28
St. Augustine's College	31
Holy Child School	19
Oguaa Senior Technical	21
Mfantsipim Senior High	40
University Practice Secondary	31
Effutu Senior High	24
Academy of Christ the King Senior High	21
Cape Coast Technical Institute	31
Total	313

Source: Field survey, Mintah (2020)

The sample size calculations were done on the basis of the various selected schools represented in Table 3. It virtually guarantees that major features (usage of the SIS) of instructors in the population are involved in equal percentages in the sample. To increase the degree of representativeness, the simple random sampling method was adopted to choose teachers for the administration of questionnaire. The simple random sampling is a sample that is chosen at random to avoid bias and unwanted effects (Ary, Jacobs & Sorensen, 2010). To achieve this, the lottery sampling method gave the researcher the chance to get the true representation of the teachers for the administration of the questionnaires across all the selected schools in the study

without any form of bias. In selecting teachers from the schools for the research, the heads of the schools were consulted. The office of the assistant head academic supplied a list of all teachers enrolled in the schools and their respective subject areas to the researcher. The researcher then assigned every population element a different number to identify them in order to randomly sample the respondents from the population. For instance, this procedure was followed in obtaining a sample of 40 teachers from the teachers' population at Ghana National College.

Firstly, the researcher enumerates all the individuals in the population. The researcher then assigned a number to each teacher in the population from the numbers 00, 01, 02, 03, to 40. Every teacher was then identified with equal digits number of identification value. Secondly, the researcher wrote the teachers' numbers on distinct paper pieces, place them in a container and mixed it by shaking before allowing each teacher to draw a slip out. The shaking/drawing process continued until 40 slips of papers were picked by individual teachers. Moreover, the number of teachers according to required sampled size for each school (Table 3) who picked a sheet of paper served as respondents for the data collection. 313 teachers in total were chosen for this research.

Furthermore, the researcher selected twenty-two (22) ICT administrators from eleven (11) senior high schools. However, two (2) ICT administrators each were selected from each school. The ICT administrators were selected using purposive sampling method. Orji, Madu and Nwachukwu (2015) explained that purposive sampling is not done on pilot or random basis but the researcher makes a choice of a specific sample part and magnitude which he sees to be

good, applicable and suitable for his study. Purposive sampling is appropriate and useful in soliciting participants' attitudes and opinions on the use of the free SHS students' information system because of their in-depth knowledge on the phenomenon (Ary, Jacobs, & Sorensen 2010).

Again, the ICT administrators directly supervise and assist teachers during entering of students' results within the selected schools for this study. They are pertinent to the study because they supervise the use of the information system. Thus, they are always involved in any updates that come out as far as the SIS is concerned. They also attend training and workshops on the use of the SIS and again enter students' marks using the same SIS database. Finally, the ICT administrators were also needed for this study because, when it comes to information system in the various schools, ICT administrators are responsible for such duties. Therefore, the researcher sees them to be in the right position to give the needful information regarding the study.

Data Collection Instruments

Data collection for this study was made possible by the help of a self-developed questionnaire (see Appendix A) and a semi-structured interview guide (see Appendix B) as instruments used. The questionnaire was designed to gather data from all the teachers whereas a semi-structured interview guide was designed to solicit data from the ICT administrators via face-to-face interactions. These instruments were developed by the researcher himself.

Questionnaire

First of all, a questionnaire titled "The free SHS management information system (MIS) usage and its satisfaction of school records in SHS

in the Cape Coast Metropolis" was designed by the researcher. This was selected to gather data from teachers. The use of the questionnaire enabled the researcher to gather varied responses from a large number of teachers for this study (Sarantakos, 2005).

The questionnaire was made up of fifty-two (52) items and five main sections. Sections A, B, C, D and E. Section A solicits demographic data of teachers. Sections B, C, D, and E of the questionnaire solicits information on the determinants of the usage of the Free SHS Information System, the determinants of the user satisfaction of the Free SHS Information System and the differences that exist in the school use of the Free SHS Information System in terms of school category. Finally, the questionnaire solicits information on the differences in the user satisfaction of SIS in terms of school category. Research question one (1) sought to examine the determinants of the usage of the Free SHS Information System. Multiple-choice responses and the four-point Likert scale scored as; "Agree" and "Disagree", "Strongly Agree" and "Strongly Disagree". "Strongly Agree" = 4, "Agree" =3, "Disagree" =2 and "Strongly Disagree" =1 format was developed to elicit information on the determinants of the usage of the Free SHS Information System. This was to measure the level to which teachers agree or disagree with the statements (see Appendix A).

Research question two (2) seek to study the determinants of the user satisfaction of the Free SHS Information System. Multiple-choice responses and the four-point Likert scale scored as; "Agree" and "Disagree", "Strongly Agree" and "Strongly Disagree". "Strongly Agree" = 4, "Agree" = 3, "Disagree" = 2 and "Strongly Disagree" =1 format was developed to elicit

information on the determinants of the user satisfaction of the Free SHS Information System. This was to measure the degree of teachers' agreement or disagreement with the statements. Research question three (3) seek to study the differences that exist in the school use of the Free SHS Information System in terms of school category. Multiple choice responses and the four-point Likert scale scored as; "Agree" and "Disagree". "Strongly Agree" and "Strongly Disagree". "Strongly Agree" =4, "Agree" =3, "Disagree" =2 and "Strongly Disagree" =1 format was developed to elicit information on the difference exists in the school use of the Free SHS Information System in terms of school category. This was to measure the degree of teachers' agreement or disagreement with the statements (see Appendix A).

Research question four (4) sought to examine the existing differences in user satisfaction of SIS in terms of school category. Multiple choice responses and the four-point Likert scale scored as; "Agree" and "Disagree". "Strongly Agree" and "Strongly Disagree". "Strongly Agree" =4, "Agree" =3, "Disagree" =2 and "Strongly Disagree" =1 format was developed to elicit information on the difference exists in the user satisfaction of SIS in terms of school category. This was to measure the degree of teachers' agreement or disagreement with the statements (see Appendix A).

The questionnaire had forty-nine (49) closed-ended and three (3) open-ended questions for teachers. The closed-ended questions provided check-mark responses with regard to the determinants of the usage of the Free SHS Information System, the determinants of the user satisfaction of the Free SHS Information System, the differences that exist in the school use of the Free SHS Information System in terms of school category and the variations in the

user satisfaction of SIS in relation to school category. The open-ended questions for teachers provided the opportunity for them to provide needed information with respect to their own perceptions of the determinants of the usage of the Free SHS Information System, the determinants of the user satisfaction of the Free SHS Information System, the differences that exist in the school use of the Free SHS Information System in terms of school category and the variations in the user satisfaction of SIS in relation to school category which the researcher did not capture in the questionnaire. The use of the questionnaire also offered teachers a higher degree of confidence that their information, whatever it was, would remain confidential.

Respondents were anticipated to answer by indicating either agreed or disagreed in respect to the level to which the statement reflect them. The administration of the questionnaire was by the hand of the researcher. The researcher also with care read the instructions to the respondents with explanation for better. Ample time was also given to answer all the questions after which the questionnaires were taken immediately to do away with any form of unfairness that might arise due to filling the questionnaires at home.

Semi-Structured Interview

The semi-structured interview guide was used to gather data from the ICT administrators via face-to-face interactions. Interviews refer to gathering data from people seen to be extremely well-informed on the matter of importance. According to Baker and Baker (2010), an interview is a technique that is used to comprehend the main reasons, drives for people's attitudes, perceptions or behaviour. Interviews are conducted to find out the factors that cannot be directly observed or noticed (Frankel &Wallen, 2000). Interviews

point to the fact that one cannot observe everything, for instance, feelings, thoughts and intentions (Frankel &Wallen, 2000). They further stated that interviews have the advantage of getting accurate information from respondents, good response rate and the interviewer holds the power to seek clarity when needed.

The ICT administrators were also interviewed based on the research questions posed. This is because the researcher would want to know whether the teachers' findings would agree to the opinions of the ICT administrators regarding the usage of the SIS. The research questions one to four were used to interview the ICT administrators on the determinants of the usage of the Free SHS Information System, the determinants of the user satisfaction of the Free SHS Information System, the differences that exist in the school use of the Free SHS Information System in terms of school category and the differences in the user satisfaction of SIS in terms of school category whenever they use the system and the suggested solutions to make the system user friendly at the Cape Coast Municipality.

Semi-structured interviews permitted room for respondents to respond to questions voluntarily as compared to the standardized interview yet deliver a better comparison basis over that of the intensive interview. While the interview procedure is an appreciated means of gathering good and detailed data, it can take a lot of time and resource. The communication between the respondent and the interviewer can vary depending on the respondent as each interview is exclusive and the value of the data gained from diverse interviews may differ meaningfully (Kumar, 2005)

Moreover, the experience, skills and commitment of the interviewer affects the value of the data taken (Kumar, as cited in Kwenin, 2018). A danger of researcher unfairness can also occur. In totality, gaining reliable data can be very complex on the research topic if only ICT administrators or teachers were interviewed. Notwithstanding the challenges, the researcher went on to use the interview guide. This is because, the researcher's presence established rapport flexibility, high response rate, more complete answers and time for thoughtful answers (Ary, Jacobs & Sorensen, 2010).

Validity and Reliability of Instruments

Validity is defined as the degree to which a research tool measures what it senses to measure (Feldman, 1997). The validity and reliability of the research tool were thru using colleague researchers and expert judgment from my supervisor. In this regard, after developing the questionnaire, copies of the questionnaire were submitted to my supervisor for him to make comments as well as corrections. This was meant to confirm that the questionnaire items are adequately and comprehensively captured. The modifications and propositions of the supervisor led to a change of some items in the questionnaires with no exception to the interview guide. Moreover, my supervisor examined the content of the questionnaire to remove ambiguities, wrong phrases and sequences and directed the questions in the instrument to the research questions posed.

Pre-testing of Instruments

To enable the researcher to test the usability of the questionnaire, it was pre-tested. This helped to discover the questionnaire items' reliability and validity. Also, the need to find out whether the instruction associated to the

items was clear enough to guide the teachers to complete as accurately as possible. Piloting the instrument made way for the researcher to receive feedback on the fullness and correctness of the items in the instrument used for this study.

The questionnaire was pre-tested at the Ngleshie Amanfrom Senior High School and West Africa Senior High School in the Central and Greater Accra Region respectively. Ngleshie Amanfrom Senior High School and West Africa Senior High School are among the Senior High Schools that use the SIS. Teachers in these schools undergo similar usage and satisfaction as offered by the System. The Ngleshie Amanfrom Senior High School and West Africa Senior High School were selected because they use the same Student Information System.

In this pre-test, the Croncbach's alpha (a) values recorded for section B, C, D and E were 0.706, 0.910, 0.734 and 0.714 respectively. The alpha values recorded were greater than 0.7, this implies a higher core constancy between the test items (Bland & Altman,1997). The alpha value was taken as a suitable standard of finding the reliability of an instrument for research aim because Cohen, Manion and Morrison (2007) have specified that such reliability co-efficient are seen high and therefore suitable. This aided the researcher to find the core consistency of the questionnaire items. The outcome was a sign that the instrument was reliable. Also, the outcomes obtained made the researcher modify some of the items on the questionnaire which were ambiguous to the teachers. This permitted the researcher to generate the questionnaire which was best to elicit responses.

Data Collection Procedure

After getting approval from my supervisor, the researcher got a letter from the Department of Mathematics and ICT Education of the University of Cape Coast, introducing the researcher as a graduate student (see Appendix C). The letter was sent to the headmasters/mistresses of the selected schools. With their approval, the researcher was introduced to the staff members by the headmaster/mistress of the school. After the brief introduction the heads explain to the participants my reason of coming. Again, the heads made the teachers aware that this study was for academic purposes. The questionnaire was given to the teachers who were only selected. The selected teachers were informed on the research purpose before the questionnaire was administer to them. The questionnaires were collected after 30 minutes after they had finished completing them.

In the case of the ICT administrators, an initial appointment was booked to agree on a convenient date and time for the conduct of the interview. The entire interview was audiotaped to ease transcription, it took an average of 45 minutes for an interview session.

Data Processing and Analysis

Data collected from teachers and ICT administrators were analyzed through quantitative and qualitative means respectively. Descriptive statistics allowed the researcher to analyze and describe the data in a way to answer each detailed research question in the study (Patton, 2002). Descriptive statistics such as frequencies, percentage, mean and standard deviation were considered to analyze the quantitative data. These were done by means of the Statistical Product for Social Science (SPSS Version 21.0). Again,

quantitatively, the process involved is, before collecting the questionnaires, the questionnaire was carefully checked with its corresponding question numbers to see whether all questions were answered by the respondents (teachers). Secondly, coding of the test items was done such that the teachers' level of knowledge on the test items and the options provided by the researcher were determined. Thirdly, after coding, such information was then keyed into Statistical Product

for Social Science (SPSS) version 21 for data to be analysed and finally analysed to compute the Cronbach alpha reliability Co-efficient for items in each research question.

Table 4- Analysis Procedure for Research Questions

Research Questions	Type of Questions	Analytical tool
In the views of teachers and ICT administrators, what are the determinants of the usage of the Free SHS Information System?	Four-point likert type scale of questions and open-ended question	Frequency, percentage, mean, and standard deviation
What are the determinants of the user satisfaction of the Free SHS Information System?	Four-point likert type scale of questions	Frequency, percentage, mean, and standard deviation
What difference exists in the school use of the Free SHS Information System in terms of school category?	Four-point likert type scale of questions and open-ended question	One-way ANOVA
In the views of teachers and ICT administrators, what difference exists in the user satisfaction of SIS in terms of school category?	Four-point likert type scale of questions and open-ended question	One-way ANOVA

Source: Field Data (2020)

Qualitative Data Analysis

The qualitative data was collected through interviews and written comments by the ICT administrators. The interviews were audio-taped, transcribed verbatim and analysed using the inductive analysis process. The inductive analysis process as described by Creswell (2002) involves familiarization reading (initial reading) to have an understanding of the content, themes and events covered in the transcript. This was followed by the identification of the segments and categorization. These stages took into consideration the uniqueness, consistency, frequency and appropriateness of the comment related to the theme. Descriptive and reflexive notes were taken separately until the researcher was convinced of full understanding of the participants' perspectives on the issues. The themes derived from the transcript were coded and aggregated into broader themes that were aligned with the research questions posed.

Ethical Consideration

In conducting research, Creswell (2008) teaches researchers to seek authorization from data site authorities for access to study. In this study, the researcher deliberated with schools' heads, on time, how and the participants from whom data will be collected in the selected schools. When access was granted, the researcher then discussed other ethical issues with the respondents of the study.

After gaining authorization from the heads holding control of the schools, it was prudent to gain the necessary consent of the targeted respondents of the research. Necessary consent is an ethical requirement which calls for the respondent consent to partake or not to partake in the

research after disclosing complete information on risks and benefits relating to the responding (Makore-Rukuni, 2001). The participants are at liberty to decide partaking or pull out from the study at any moment of their choice if they want to (Tuckman, 1994). In this research, the researcher disclosed to chosen respondents the purpose of the study. The respondents had a wide range of options to choose to partake or not in the research.

The following ethical issue deliberated was confidentiality. Confidentiality shows the researcher's ethical responsibility to make sure the respondent's identity and answers are kept in private (Babbie & Mouton 2001). In this study, the researcher stands not to share any information given with any third-party user. The information was used purposely for the research. Discussed next to confidentiality was anonymity. It was used in order to guard respondents' privacy right. A respondent appears to be anonymous when nothing not even the information given can trace to his/he identity. (Cohen et al., 2007). In this study, anonymity was achieved by preventing the writing of names on the questionnaire, or mention their school or names during the interview session. Moreover, partakers in this study were recognized by alphabets instead of names. Anonymity was guaranteed through categorizing of data instead of showing individual responses.

Chapter Summary

This chapter brought out the research method that was accepted to safeguard that the findings of this study were well rooted in the proves that this study provided. The research used the descriptive design which aided to gather and analyse data both quantitative and qualitatively. The targeted population of this study constituted 1,154 teachers from eleven (11) Senior

High Schools in the Cape Coast Municipality. A sample of 313 teachers and twenty-two (22) ICT administrators were selected for this study using a proportional stratified random sampling and purposive sampling respectively. Finally, the data gathered were analysed by mean, standard deviation, frequency percentage and one-way ANOVA. The next chapter within this work would be focused on the results of the analysis conducted for the study.

CHAPTER FOUR

RESULTS AND DISCUSSION

Introduction

This chapter makes known the discussion and results of the findings. The results of this study are presented in two sides. The first side covers the demonstration of the bio data of teachers while the second side presents the main data outcomes in line with the research questions.

Demographic Characteristics

In this section, the biographical information of the teachers who took part in this study is presented. This information is very relevant because it can influence the extent to which the teachers would reason or think through the questions before they provide answers to the questions, especially their levels of education and years of teaching. Gender, age, level of education, and the number of years in service as a teacher are some of the characteristics that are included in the demographic data for the teachers. The results are shown in Table 5 and are presented using frequency and percentages. As can be seen in Table 5, a total of 306 teachers were used for the analysis after managing the data. Out of these sampled respondents, 211 (69 %) were male teachers and the remaining 95 (31.0 %) were female teachers.

Table 5: Background Information of Teachers

Variable	Frequency	Percentage
Gender		
Male	211	69.0
Female	95	31.0
Age Group		
20 – 30	88	28.8
31 – 40	149	48.7
41- 50	50	16.3
51- 60	19	6.2
Level of Education		
First degree	224	73.2
M. Ed	39	12.7
MPhil	41	13.4
PhD	2	0.7
Years of Teaching		
Less than a year	25	8.2
1-5	165	53.9
6-10	70	22.9
10 Years or More	46	15.0
Total	306	100

Source: Fieldwork, Mintah (2021)

In terms of their ages, it is clear from the outcomes that the majority of the teachers representing 48.7% (n=149) were between the ages of 31 to 40 years whilst 6.3% (n=19) of the teachers were above 51 years. The rest, 28.8%

(n=88) and 16.3% (n=50) were between 20 to 30, and 41 to 50 years respectively. When it comes to the level of education acquired by teachers, the vast majority of them 73.2 % (n=224) had at least a bachelor's degree while a minimum of 7% (n=2) were PhD holders. The rest had master's degree, either M.Ed. 12.7% (n=39) or MPhil 13.4% (n=41). In terms of years of teaching, it can be seen from Table 5 that majority of the teachers 53.9% (n=165) have been teaching between the years of 1 to 5. However, 46 of the teachers (15.0%) have been teaching for 10 years and above and the rest of them 22.9% (n=70) and 8.2% (n=25) had taught within 6 to 10 and less than a year respectively.

The ICT coordinators who were interviewed were all males. It involved eleven (11) ICT teachers from the selected schools for this study. The ICT teachers were all aged above thirty (30) years. Again, more than half of the ICT coordinators had obtained a postgraduate degree (M.Ed. or MPhil). Also, all of them had been in their respective roles for not less than six years. The participants (ICT coordinators) were represented by codes. These were IT 1, IT 2, IT 3, in that order.

Presentation and Discussion of Key Findings

This chapter facet shows the major presentation and discussion of the findings that arose from the study. These main results are planned and discussed by the research questions modelled.

Research Question 1: What are the determinants of the usage of the Free SHS Information System

Items 5 to 16 on the questionnaire elicited responses on factors that determine the usage of the Free SHS Information System whereas items 'a' to

'I' on the interview guide (ICT coordinators) elicited responses on the views of ICT coordinators on the factors that determine the usage of free SHS Information System. The analytical tools used on the data attained from the teachers were frequencies, percentages, means and standard deviations. The outcomes are presented in Table 6. For the easier presentation and simple understanding of the analyzed results, the researcher presented both 'Strongly Disagree' and 'Disagree' as "Disagree", 'Uncertain' as well as 'Agree' and 'Strongly Agree' as "Strongly Agree".

Table 6: Determinants of the usage of the Free SHS Information System

STATEMENT	SD N (%)	D N (%)	UN N (%)	A N (%)	SA N (%)	Mean	Std. Deviation
The system helps me to easily download students' results.	21 (6.9)	23 (7.5)	41 (13.4)	160 (52.3)	61 (19.9)	3.71	1.08
The Students Information System (SIS) help me to easily enter my scores as a teacher.	11 (3.6)	11 (3.6)	15 (4.9)	175 (57.2)	94 (30.7)	4.10	0.91
I can open my portal as a form master or mistress to give comments on my student's performance.	8 (2.6)	16 (5.2)	53 (17.3)	139 (45.4)	90 (29.4)	3.94	0.95
The Students Information System (SIS) supports the current windows operating system.	7 (2.3)	16 (5.2)	60 (19.6)	165 (53.9)	58 (19.0)	3.82	0.88
The SIS helps to facilitate easy access to students' information.	8 (2.6)	15 (4.9)	47 (15.4)	166 (54.2)	70 (22.9)	3.90	0.90
On average, I use the SIS once a day.	27 (8.8)	77 (25.2)	72 (23.5)	107 (35.0)	23 (7.5)	3.07	1.12
As a teacher, the SIS easily helps me to add students to my account.	19 (6.2)	50 (16.3)	56 (18.3)	153 (50.0)	28 (9.2)	3.40	1.10
As a teacher, the SIS easily helps me to assign students to my subject.	17 (5.6)	44 (14.4)	48 (15.7)	155 (50.7)	42 (13.7)	3.53	1.10
I often use Microsoft Excel within SIS in entering students' scores.	21 (6.9)	40 (13.1)	49 (16.0)	141 (46.1)	55 (18.0)	3.55	1.13
I find it difficult when I want to upload scores on Microsoft Excel onto the SIS.	40 (13.1)	79 (25.8)	86 (28.1)	79 (25.8)	22 (7.2)	2.88	1.15
The SIS helps me as a teacher to generate efficient results for analysis.	8 (2.6)	19 (6.2)	47 (15.4)	179 (58.5)	53 (17.3)	3.82	0.88
The SIS helps me to interpret students' scores entered correctly.	7 (2.3)	10 (3.3)	37 (12.1)	177 (57.8)	75 (24.5)	3.99	0.84

Source: Fieldwork, Mintah (2021)

Table 6 describes the determinants of the usage of the Free SHS information system. The results presented in Table 6 reveal that, on average, most of the respondents agree with the statements used to examine the first objective of the study. Specifically, out of the total sample of 306 participants, 72.2% (n=221) agree that the system helps them to easily download students' results. This implies that on the average value of 3.71 and a standard deviation of 1.08, the majority of the total sample uses the system to source information on students' results. Concerning the use of the Students Information System (SIS) by teachers to enter scores, the outcomes show that the vast number of the participants representing 87.9% (n=269) believed that the system is capable of assisting them in entering their scores and often use the Microsoft office embedded in the SIS to enter student scores quickly and simply. Also, 72.9% (n=223) of the total respondents agree that the Students Information System is compatible with the most up-to-date version of the Windows operating system. This is not surprising since 77.1 % (n=236) of the respondents said that the SIS helps to facilitate easy access to students' information. Though not all the teachers agree that they can open their portal as form teachers to comment on their student's performance, the outcomes from Table 6 indicate that 74.8% (n=229) of the teachers approved that they can open their portal as a form master or mistress to give comments to their student's performance. This indicates that more than half of the total population of teachers sampled can open their portal to give comments on their student's performance as form teachers with a mean score of 3.94 (SD=.95).

As shown in Table 6, on average, almost 43% (n=130) of the whole sample indicate that they use the SIS once a day. This implies that less than half of the total population uses the SIS once a day. When it comes to the difficulties of adding students to teachers' accounts and assigning them to teachers' subjects, more than half of all the sample respondents representing 59.2 % (n= 181) of respondents agree that the SIS makes it simple for them to add students to their accounts and allocate them to their subject. A total of 64.4 % (n=197) of the teachers believed that the SIS assists them in producing efficient results for analysis and in interpreting students' scores recorded accurately.

On the issue of teachers uploading scores from their Microsoft Excel onto the SIS, 38.9 % (n=119) of the total respondents indicated that they find it difficult when they want to upload scores on Microsoft Excel onto the SIS. It can therefore be inferred that perhaps, the teachers who find it difficult to upload students' scores on Microsoft Excel onto the SIS are not perfect enough to perform such an operation. Finally, it can be seen from Table 6 that a total of 82.3% (n=252) of the teachers agree that the SIS helps them to interpret students' scores entered correctly. A greater number of the teachers saw the SIS be helpful to them to interpret students' scores entered correctly, with a mean score of 3.99 (SD=.84).

Table 7: Theme and sub-themes on determinants of the usage of free SHS information system (Qualitatively)

Themes	Sub-themes	Related issues
Determinants of the usage of free SHS information system	SIS in scores entering	The SIS has helped teachers and form masters to take away the old method of using papers in entering students' records and also the method of keeping students' records on papers for references.
	Opening portal for form master or mistress	Form masters found it easier in opening their portals to comments on students' performances using their laptops and phones.
	Difficulty in uploading scores on Microsoft Excel onto the SIS	Teachers find it difficult in uploading their scores onto the SIS using Ms Excel. This is because most teachers are not family with the use of Ms Excel.
	The SIS interprets students' scores	Interpretation of students' scores is done automatically within the SIS once the right scores for students are entered into the system by teachers.

Source: Fieldwork, Mintah (2021)

According to Mahr, (2010), information systems roles in an organization are many, such as; business transactions processing, monitoring, employees' performance evaluation, operation's efficiency advancement, rendering decision support, documentation and communication channels maintenance. Just to mention a few. Concerning the determinants of the usage of the free Senior High School information systems, the results from the sub-themes generated from the qualitative data on the issue are presented below.

SIS in scores entering

The data obtained from the ICT coordinators interviewed from the selected schools revealed that the introduction of the free SHS information system had taken away a lot of workloads from them and teachers. Some specific claims made included:

"…The SIS has taken away a lot of work from the teachers as well as the form masters because they have the chance now to see all the performances of every student to give the appropriate comment for each student. It has also taken away the old method of using paper in recording students' marks, indeed, it is helpful…" (IT 11)

Also, the ICT coordinators indicated that the free SHS information system was introduced not quite long ago yet they find it easy to use because the system is usable on their phones and laptops.

Opening portal for form master or mistress

Regarding the usage of the free SHS information system by form masters and mistress, the ICT coordinators interviewed revealed that form masters can open their portal to give comments on their student's performance. They also revealed that initially form teachers were using the results book

where they were to take it home to fill in the records of the students and give it to other teachers to do the same. However, this is not so with the use of the SIS, thus, the SIS had made it simpler to keying students' results. This is because one needs not to take any record home for entry. Specifically, it was revealed that;

"…*The SIS has not given form teachers any challenge so far…" (IT 6)*

They added that the SIS is easy to use in terms of opening the portal to comment on students' performance.

Difficulty in uploading scores on Microsoft Excel onto the SIS

Regarding whether or not, teachers find it difficult in uploading students' scores in Microsoft Excel onto the SIS, it was revealed that few teachers use MS Excel in uploading students' scores onto the SIS. This is because most teachers do not have much knowledge of using Ms Excel. Therefore, the ICT coordinators have been assisting teachers in loading the excel template onto the SIS. Specifically, it was indicated that;

"…*The very few teachers who use the excel come to the ICT lab for us to upload their excel template for them…*" (IT2)

The above statement from the coordinator implies that the coordinators have been helping some teachers who find it difficult in using the excel template within the SIS in uploading their scores.

The SIS interprets students' scores

The next sub-theme is SIS to interpret student scores. It was revealed that students' scores would have to be inputted into the SIS before their interpretation. Hence, the SIS automatically interpret students' scores into

grades 'A1' or 'B2' or 'B3' in that order once their scores are successfully entered. One ICT coordinator noted that;

"…*The scores and grades have already been inputted into the system so once the teacher keys in the right scores, the interpretation is generated within the SIS*…" (IT 4)

This implies that the SIS straight way interprets the scores into the various grades set by the coordinators whenever the teachers key in the raw scores of their students.

Research Question 2: Determinants of User Satisfaction of the Free SHS Information System

Items 17 to 27 on the questionnaire elicited responses from teachers whilst items 'a' to 'j' under question two on the interview guide elicited responses in the determinants of the user's satisfaction with the Free SHS Information System. The analytical tools used on the data attained from the teachers were frequencies, percentages, means and standard deviations. The results are presented in Table 8. For easier presentation and a simple understanding of the analyzed results, the researcher presented both 'Strongly Disagree' and 'Disagree' as "Disagree", 'Uncertain' as well as 'Agree' and 'Strongly Agree' as "Strongly Agree".

Table 8: Determinants of User Satisfaction of the Free SHS Information System

Statement	SD N (%)	D N (%)	UN N (%)	A N (%)	SA N (%)	Mean	Standard Deviation
The Students Information System (SIS) is error-free.	52 (17.0)	87 (28.4)	85 (27.8)	69 (22.5)	13 (4.2)	2.67	1.12
The Students Information System (SIS) helps to capture students' marks.	3 (1.0)	13 (4.2)	20 (6.5)	203 (66.3)	67 (21.9)	4.04	0.74
The steps to be followed to use the SIS are clear.	3 (1.0)	27 (8.8)	53 (17.3)	169 (55.2)	54 (17.6)	3.80	0.87
The SIS is user-friendly.	8 (2.6)	21 (6.9)	44 (14.4)	191 (62.4)	42 (13.7)	3.78	0.86
I feel satisfied with the information I generate from the SIS.	5 (1.6)	22 (7.2)	62 (20.3)	179 (58.5)	38 (12.4)	3.73	0.83
I can use the SIS without any help from the ICT Coordinators.	14 (4.6)	79 (25.8)	50 (16.3)	139 (45.4)	24 (7.8)	3.26	1.07
I can easily access the SIS on my phone.	13 (4.2)	39 (12.7)	33 (10.8)	146 (47.7)	75 (24.5)	3.75	1.09
I am satisfied with the analysis of students' results generated from the SIS.	9 (2.9)	17 (5.6)	40 (13.1)	194 (63.4)	46 (15.0)	3.82	0.86
I like the way the SIS generate the student's reports.	6 (2.0)	14 (4.6)	45 (14.7)	176 (57.5)	65 (21.2)	3.92	0.85
I am satisfied with the quick response of the SIS whenever I open it.	5 (1.6)	36 (11.8)	50 (16.3)	152 (49.7)	63 (20.6)	3.76	0.97
I can easily locate my class whenever I open the SIS.	5 (1.6)	25 (8.2)	46 (15.0)	155 (50.7)	75 (24.5)	3.88	0.93

Source: Fieldwork, Mintah (2021)

Table 8 explains the various factors that come into play when assessing an individual's level of satisfaction with the Free SHS information system. The findings indicated that the most of the participants, averagely, agree with the assertions that were used in the examination of the second aim of the study. Contrary to the positive views shared by teachers regarding the free SHS Information System, 45.4% (n=139) disagree that the SIS is not an error-free system. This implies that on the average value of 2.67 and a standard deviation of 1.12, the majority of the total sample believed that the system is associated with some form of mistake. However, observing from Table 8 most of the teachers, n=270 representing 88.2 % agree that the Students Information System (SIS) helps them to capture students' marks. The results from the same table reveal that most of the teachers representing 72.8% (n=223) agree that the steps that needed to be performed to use the SIS are straightforward. This indicated that a bigger proportion of the teachers felt that the procedures that must be carried out to operate the SIS are clear and not ambiguous. Concerning the SIS has been user-friendly (76.1%, n=233) as most teachers agree that the SIS is user-friendly, and they can use it without any difficulty.

In addition, responding to whether or not the teachers are satisfied with the information that is produced by the SIS, a total of 71% (n=217) of the teachers' side with the statement that they enjoy the way the SIS generates the reports for the students. In terms of the use of the SIS, more than half (53.2 %, n=163) of the total teachers sampled agree that they are used to the system without the help of the ICT coordinators. It should not come as a surprise that this occurred since it was revealed in the same table that the majority of the teachers (n=221, 72.2%) can access the SIS on their phones. Concerning the

analysis of students' results generated from the SIS, the findings indicate that most of the participants representing 78.4 %, (n=240) agree that the system can assist teachers in analyzing the results of their students. An equal number 78.7% (n=241) of the total respondents agree that they like the reports generated by the Students Information System. Though not all the teachers are satisfied with the quick response of the SIS whenever they open it, a total number of 215, (70.3%) agree that they are okay with responses provided by the system whenever they opened it. Lastly, Table 8 shows that 93.2% (n=230) of the teachers agree that they can easily locate and open their classes on the system without finding any difficulties.

Table 9: Theme and Sub-themes on determinants of the User Satisfaction of the Free SHS Information System

Theme	Sub-themes	Related Issues
Determinants of the user satisfaction of the Free SHS Information System	SIS to capture students' marks.	The system makes it simple for teachers to record the grades of each student; however, the difficulty is in translating these scores to percentages less than 100, such as 30 and 70, given that the scripts are graded at more than 100.
	Steps in using the SIS	The instructions for using the SIS are laid out in a way that is quite straightforward to understand and follow.
	To locate classes on the SIS.	The SIS has an organized and aesthetically pleasing layout for the class schedule.
	Errors in the use of the SIS	Although there are flaws in the system. However, such errors are rather minor. For instance, the system ranks a student who registers for two in contrast to a student who registers for eight courses as the best performer, which is unfair.
		Internet connectivity is the only problem.

Source: Fieldwork, Mintah (2021)

The qualitative results from the themes and sub-themes generated from the qualitative data on teachers' satisfaction with the use of the free SHS information system are presented below.

SIS to capture students' marks

The data that was acquired from the interviews with ICT coordinators from the chosen institutions indicated satisfaction with the use of SIS to enter student scores. ICT coordinators were asked to speak about their satisfaction with the use of the system concerning capturing student marks. From the coordinators' point of view, the system makes it easy for them to record the scores of their students. However, they further indicated that the difficulty comes when they are translating these scores to percentages less than 100. One of the coordinators said the following:

"…I'll say it's easy. But the problem is converting to 30% and 70%. You know, that's where the challenge is. This is because teachers usually mark their scripts over 100%. So, after 100% of the continuous assessment, you have to convert it into 30%. But it should be such that you key in and then the system converts whatever mark is there over to 30% and then to 70% to make it easier for teachers…" (IT 10).

This implies that the SIS does not have any mechanism that will be able to convert any marks that are above 30% and 70% if entered by the teachers and this possess a problem for the teachers.

Steps in using the SIS

In addition, the researcher wanted to find out how well or easily the steps involved in using the SIS could be followed by teachers. The majority of ICT coordinators who were interviewed shared a similar perspective on this

matter, most likely as a result of the experience and training they have with the system. Some of the things that they had to say about the steps involved in using the SIS to fill in student scores are included below:

"…Yeah, the steps to follow in using the SIS are very simple and easy to follow. We don't have much problem in doing that …" (IT 9)

From the above view, it can be deduced that teachers find the steps in opening the SIS straightforward.

Location of classes on the SIS

The researcher further intended to look out for what ICT coordinators perceive about the location of classes on the SIS. Based on information gathered from the coordinators, it was claimed that the class schedule on the SIS was well-organized and easy to read. One of the ICT coordinators who took part said this:

"…Classes are arranged nicely on the SIS. So you go to your class, you click on it, and then it opens nicely for you…" (IT 8)

The above view implies that teachers find classes on the SIS neatly arranged and easy to find.

Errors in the use of the SIS

The researcher investigated further to find out if the SIS is free from errors. On the whole, responses from the ICT coordinators showed that there are flaws in the system. However, such errors are rather minor. For instance, the system ranks a student who registers for two in contrast to a student who registers for eight courses as the best performer, which is unfair. One coordinator said:

"…The system has errors in it, and we have complained to the providers. But the error is marginal, so we are managing it. So, for example, a student who registers two courses and a student who registers eight courses. In terms of ranking, the system ranks the student who registered for only two (2) courses as the best performing student than the student who registered for the eight courses which make it unfair…" (IT 11)

The above statement implies that there are errors within the SIS, but these errors are marginal.

From the discussions, they do not encounter technical problems but internet connectivity. One coordinator participant noted that:

"…So far we have not encountered any error; internet connectivity normally poses a problem…" (IT 7)

The above statement implies that internet access is the only problem in accessing the SIS.

Research Question 3: What difference exists in the actual usage of the Free SHS Information System in terms of school category?

To establish whether the differences exist in the actual usage of the Free SHS Information System in terms of school category, a one-way analysis of variance (One-Way ANOVA) was performed on each of the ten (10) statements. This was done to determine whether or not there are differences in the actual usage of the Free SHS Information System in terms of school category and Table 10 presents the findings in their entirety. The results from the table indicated that across all the statements, there is a significant difference that exists in the actual usage of the Free SHS Information System in terms of school category. For instance, a p-value (0.000) associated with the

descriptions on the interface of the SIS designed to suit the school indicates there is a statistically substantial variation between the actual usage of the system in terms of school category at all levels of significance.

Table 10- One-Way ANOVA of Differences that exists in the Actual Usage of the Free SHS Information System in terms of School Category

ANOVA

Statements		Sum of Squares	Df	Mean Square	F	Sig.
The descriptions on the interface of the Students Information System (SIS) are designed to suit my school.	Between Groups	48.737	10	4.874	5.241	.000
	Within Groups	274.322	295	.930		
	Total	323.059	305			
The data displayed on the SIS can be used by the school to make a decision.	Between Groups	42.563	10	4.256	6.853	.000
	Within Groups	183.228	295	.621		
	Total	225.791	305			
The total number of students within the school can be identified on the SIS.	Between Groups	35.292	10	3.529	4.236	.000
	Within Groups	245.767	295	.833		
	Total	281.059	305			
The SIS helps me to rank students according to their performance set by my school.	Between Groups	16.369	10	1.637	2.306	.013
	Within Groups	209.396	295	.710		
	Total	225.765	305			
The SIS help me to sort	Between Groups	27.487	10	2.749	3.640	.000

Table 10: Cont.

students according to the program run by the school.	Within Groups	222.736	295	.755		
	Total	250.222	305			
The SIS help me to sort students according to their gender within a class.	Between Groups	26.866	10	2.687	3.628	.000
	Within Groups	218.455	295	.741		
	Total	245.320	305			
The SIS help me to sort students according to their residential (Day or Boarding) status in the school.	Between Groups	21.111	10	2.111	2.487	.007
	Within Groups	250.445	295	.849		
	Total	271.556	305			
I can use the SIS for its intended purposes in my school.	Between Groups	14.830	10	1.483	2.477	.007
	Within Groups	176.611	295	.599		
	Total	191.441	305			
The SIS help me to switch tracks anytime, according to the track in the school.	Between Groups	46.794	10	4.679	6.688	.000
	Within Groups	206.398	295	.700		
	Total	253.193	305			
The SIS is designed to meet the program requirement of the school.	Between Groups	19.272	10	1.927	3.149	.001
	Within Groups	180.519	295	.612		
	Total	199.791	305			

Source: Fieldwork, Mintah (2021)

Across all the statements, it is revealed from the above Table that a substantial variation exists in the actual usage of the Free SHS Information System in terms of school category. Concerning the statement "SIS helps me (teachers) to rank students according to their performance set by my school", there was a significant difference in the view among the selected schools f (10, 295) = 2.306, p=.013. Again considering "The SIS help me to sort students according to their residential (Day or Boarding) status in the school" and "I can use the SIS for its intended purposes in my school", there was a substantial variation in the view among the selected schools f (10,295) =2.487, p=.007 and f (10,295) =2.477, p=.007 respectively. Further, regarding "The SIS is designed to meet the program requirement of the school", there was a substantial variation between the SIS being designed to meet the program requirement of the school f (10, 295) = 3.149, p=.001. From Table 10, the variation between the groups as observed in the descriptive analysis are all substantial. All the significant values are less than the .05 significant level set for the analysis of the data.

Qualitative results on differences in the actual usage of the Free SHS Information System in terms of school category

Based on the data that was gathered and presented in Table 10 above revealed to the researcher that there is a substantial difference in the actual usage of the Free SHS Information System in terms of school category. The researcher believes that it is extremely necessary to collect qualitative data to throw more light on the specific reasons for the discrepancies in the actual usage of the Free SHS Information System according to school type. Table 11 offers a summary of some of the qualitative replies that the ICT Coordinators

interviewed provided to explain the difference that exists in the actual utilization of the Free SHS information system in terms of school category. These responses were compiled from the interviews.

Table 11: Theme and sub-themes on differences in the actual usage of the Free SHS Information System in terms of school category

Theme	Sub-themes	Related issues
The difference that exists in the actual usage of the Free SHS Information System in terms of school category	Descriptions on the interface of the SIS in terms of school category	Each school has its logo or crest that describes the SIS interface.
	Usage of data displayed on the SIS in taking decisions in terms of school category	The system provides teachers with the ability to evaluate the progress of their students and make appropriate decisions.
	Usage of SIS in ranking students' performance in terms of school category	As teachers submit their scores, the SIS generates the necessary grade assigned by the school.
	Usage of SIS in sorting students' programs of study in terms of school category	The students for each program are pushed to the SIS from the CSSPS. Administrators will also assign each student to a class in the SIS, allowing students to be sorted by program.

Source: Fieldwork, Mintah (2021)

Descriptions on the interface of the SIS in terms of school category

Participants were questioned on their school identity and asked to describe the interface of the student information system (SIS) in terms of their school category. To respond to this inquiry, ICT coordinators had a strong voice and seemed to have used the same terminology. In general, they believe that there is only one system; yet, each school has its emblem or crest which characterizes the SIS interface in terms of category. This was because each school had to register with its unique emblem or crest, which makes the process unique for each institution. The following are some of the perspectives that were shared:

"...For our school we have our crest which shows up as soon as we launch the system..." (IT 7)

"...My school have its logo and is identified by it. So, when you log in with the credential, you will see the logo there..." (IT 9)

From the above views, it can be deduced that the crest or logo on the SIS makes it easy to easily identify a school and also differentiate each category of school from the other.

Usage of data displayed on the SIS in taking decisions in terms of school category

Concerning the question of making choices based on the information that is shown on the SIS, participants were questioned further to determine how the SIS presents their information and assists them in making decisions in terms of school category. According to the comments, the system offers educators the opportunity to analyse the scores of their students and to make

value judgments that are acceptable in a variety of different ways. The following is a summary, provided by one of the participants:

"…So statistically, the system gives us different ways of accessing this in terms of results which is why many of the students are clocking A's, B's, C's etc and for score wise how many students fall within the category of marks. So, it gives much information to access…" (IT 7)

"…The data is very useful because it gives a general performance of a particular student based on Academic, and administration can make a decision based on the report…" (IT 4)

According to the above statements from the ICT Coordinators, this implies that the SIS offers different ways of accessing the student's results in terms of school category and the steps in accessing these results are different among the schools. The data that is generated by the school authorities are of quality and can be used to take a decision within a school.

Usage of SIS in ranking students' performance in terms of school category

Another issue that arose from the implementation and use of the SIS was concerned with the ranking of students according to their performance in relation to school category. Most of the comments made by respondents stated that the SIS is responsible for generating the required grade that is printed out by the school and provides them with data that can be used to evaluate the level of performance shown by the students in every school in terms of category. Again, the majority of the coordinators stated that the SIS ranks students according to their performance from ascending to descending or

descending to ascending but this is different from one school to another depending on the performance of the students. They had these to say:

"…All these things have been set by the academic board within the SIS, so as teachers enter their scores, the system generates the required grade set by the school..." (IT 3)

"…The information is displayed at the students report on the system, helps the administrators to rank students. So, it is very easy…" (IT 1)

According to the above statements made by the ICT Coordinators, teachers are pleased with the results displayed by the system and appreciate the ease with which they see the performance of their students in terms of school category.

Usage of SIS in sorting students' programs of study in terms of school category

To determine whether or not the SIS allows teachers to sort the programs of study for their students while using the system in terms of school category. The coordinators had a skewed picture of the system that was supposed to help them classify students into appropriate study programs in terms of school category. This is because all of the students for each program within a particular school category are pushed to the SIS from the CSSPS. According to the comments shared by the coordinators, these programs differ from school to school and the SIS gives the chance to the ICT Coordinators to type in the programs that are offered by the school. The coordinators or administrators of the SIS will also assign each student to a class inside the SIS, making it possible for students to be sorted by program. The following comment demonstrates this point:

"…This is connected to the CSSPS, so after admission every year, all the students for each program are pushed to the SIS. Then we (administrators) will also push the individual student for each program to a class within the SIS, so this makes it possible to sort students by the program..." (IT 3)

The above statement by the coordinator implies that they assign every student within the SIS to a program before sorting can be done under each program.

Research Question 4: What difference exists in the user satisfaction of the Free SHS Information System in terms of school category?

To establish whether the difference exists in the user satisfaction of the Free SHS Information System in terms of school category, One-Way ANOVA was computed for each of the thirteen (13) statements depicting user satisfaction of the Free SHS Information System in terms of school category. The outcomes are shown in Table 12.

Table 12- One-Way ANOVA of Difference that Exists in the User Satisfaction of the Free SHS Information System in terms of School Category

Statements	ANOVA				
	Sum of Squares	df	Mean Square	F	Sig.
I am satisfied with the recommendation of the Students Information System (SIS) in my school.	Between Groups	31.548	10	3.155	4.953	.000
	Within Groups	187.893	295	.637		
	Total	219.441	305			
I am satisfied with how I share information with my colleague teachers on the SIS.	Between Groups	45.767	10	4.577	5.609	.000
	Within Groups	240.691	295	.816		
	Total	286.458	305			
I am satisfied with the help that teachers have been getting from the technical team.	Between Groups	39.821	10	3.982	2.186	.019
	Within Groups	537.342	295	1.821		
	Total	577.163	305			
The user interface of the SIS measures up to my school standard.	Between Groups	27.520	10	2.752	3.692	.000
	Within Groups	219.869	295	.745		
	Total	247.389	305			

Table 12: Cont.

I can see that every teacher in my school is satisfied with how text is displayed on the SIS.	Between Groups	56.986	10	5.699	7.398	.000
	Within Groups	227.249	295	.770		
	Total	284.235	305			
My school is satisfied with the information printed from the SIS.	Between Groups	31.194	10	3.119	4.575	.000
	Within Groups	201.137	295	.682		
	Total	232.330	305			
The information printed from the SIS is relevant to my school.	Between Groups	27.669	10	2.767	4.760	.000
	Within Groups	171.485	295	.581		
	Total	199.154	305			
My school is satisfied with the support services that the teachers are receiving from the free SIS secretariat.	Between Groups	52.694	10	5.269	6.717	.000
	Within Groups	231.411	295	.784		
	Total	284.105	305			
My school will rate the satisfaction of how teachers use the SIS in entering students' scores as "excellent".	Between Groups	53.248	10	5.325	6.505	.000
	Within Groups	241.474	295	.819		
	Total	294.722	305			
My school is satisfied with the students' reports	Between Groups	30.472	10	3.047	4.935	.000
	Within Groups	182.142	295	.617		

Table 12: Cont.

printed from the SIS.	Total	212.614	305			
My teachers are satisfied with how fast the SIS perform their request.	Between Groups	40.199	10	4.020	4.996	.000
	Within Groups	237.360	295	.805		
	Total	277.559	305			
My school is satisfied with how the SIS improves communication among school authorities.	Between Groups	34.853	10	3.485	5.485	.000
	Within Groups	187.437	295	.635		
	Total	222.291	305			
My school is satisfied with how the SIS has helped to improve the work of the teachers in general.	Between Groups	39.390	10	3.939	5.593	.000
	Within Groups	207.764	295	.704		
	Total	247.154	305			

Source: Fieldwork, Mintah (2021)

Across all the statements, it is revealed that a substantial variation exists in the user satisfaction of the Free SHS Information System in terms of school category. Concerning the statement that "I am satisfied with the help that teachers have been getting from the technical team.", there was a substantial variation in the view among the various schools f (10, 295) =2.186, p=.019. From Table 12, the descriptive analysis observation between the groups has shown substantial variations. All the significant values are less than the .05 significant level set for the analysis of the data. These results imply that even though the selected schools use the same Students Information System, differences exist in terms of their usage and actual users' satisfaction as far as the SIS is concerned. This finding is in line with Odhiambo (2003) who revealed that the creation of unstable networks is the result of lack of ICT policy among its users at Moi University, even though implemented; its benefits would not be felt equally among its users.

Table 13: Theme and sub-themes on difference that exists in the user satisfaction of the Free SHS Information System in terms of school category

Theme	Sub-theme	Related issues
The difference that exists in the user satisfaction of the Free SHS Information System in terms of school category	Level of satisfaction in the use of the SIS in terms of school category	The school administrators are happy with the SIS. A missing transcript is the only problem.
	Level of satisfaction in the sharing of information with colleagues on the SIS in terms of school category	Our school is happy with the system's findings and sharing knowledge is simple.
		Yes, since it depends on the internet, where you are, and what information you want. If your network has problems, you may have trouble obtaining information.
	Level of satisfaction with the technical support given to teachers in terms of school category	We try hard because we've done three in-services for our teachers and they like it.
		It's acceptable since we provide workshops to educate instructors on new software.
	Level of satisfaction in terms of how text is displayed and printed from the SIS in terms of school category	In general, teachers are happy with text presentation
		Supervisors are satisfied with the report from the SIS because of its comprehensive nature.

Source: Fieldwork, Mintah (2021)

Level of satisfaction in the use of the SIS in terms of school category

The ICT coordinators were questioned further to verify the degree of pleasure in using of the SIS in terms of school category. Their results from the qualitative data suggest that they were familiar with the degree of pleasure they derived from using SIS in their school categories. This was verified by interrogating coordinators further. They were concerned that if a transcript was missing from the system, it would make things more difficult for them and this is not different in terms of school category. This is mirrored in the comments, which are as follows:

"…The school administration is well satisfied on the use of the SIS. The only challenge is that of the transcript that is missing from the system. We are highly satisfied as a school…" (IT 3)

"…To me it is ok because I am conversant with how it is used. It is also fit for its purpose…" (IT 10)

The above comments, it implies that the only dissatisfaction that the coordinators have concerning the use of the SIS is associated with the missing transcript in their various school categories.

Level of satisfaction in the sharing of information with colleagues on the SIS in terms of school category

The question of whether or not the teachers were satisfied with the usage of the system to share information with their colleagues was posed to them. It was observed by the coordinators that, the system facilitates the smooth transfer of information between the various members of the teaching staff in their school categories. Even while they stated that utilizing the system to exchange information is fairly straightforward and not different from the

category of schools, it still relies on whether or not you have access to the internet, where you are, and the information that you are looking for. If there are issues with your network, you can have difficulties receiving the information you need. These are some of the comments they shared:

"…I am very satisfied and it is easy to share information…" (IT 11)

"…We are highly satisfied as a school because of the results that we generate from the system in the sense that we also give it to teachers to also go through…" (IT 8)

"…Yes, because it depends on the internet, where you will be and which information you want and if there are hitches in your network, I don't think you will have it easy accessing information…" (IT 3)

The above statements from the coordinators imply that teachers in the various school categories are satisfied with the way the SIS works whenever they want to use it to generate results but it becomes very difficult to use it if one is having a bad network system.

Level of satisfaction with the technical support given to teachers in terms of school category

In addition, the researcher had an interest in knowing about the level of satisfaction that teachers had about the technical support that was provided to them in the school in terms of category. The vast majority of the coordinators who were asked their views on the subject did so in a manner that was consistent with one another. They said that they have been engaging in three different in-service training and that they find them to be beneficial in all the school categories. According to them as coordinators, they have been getting external technical advice as to how to correct certain errors they sometimes

face whiles using the SIS and this is not different in terms of school category. Some of the things that they have to say are as follows:

"…We do our best because we have been able to run three in-service training for our teachers. They appreciate it and so we are satisfied as a technical team…" (IT 9)

"…It is satisfactory because time to time we have been organizing workshops to train the teachers if there is any new development in the software…" (IT 7)

The above statements from the coordinators imply that the training and workshops being organized for the teachers gives them satisfaction and abreast them with new development that occurs within the SIS in all the school categories.

Level of satisfaction in terms of how text is displayed on the SIS in terms of school category

The researcher conducted more investigation to determine whether or not the text that is shown on SIS is acceptable and presentable in terms of school category. The reply from the coordinators indicated that, in all the school categories, the teachers are pleased with the way the text is presented on the SIS, and the supervisors are also pleased with the report that is been printed from the SIS because it is so complete in terms of school category.

This is reflected in the comments:

"…In general teachers are satisfied with how a text has been displayed. Apparently with the graphical view…" (IT 2)

"…My bosses are satisfied with the report from the SIS because of its comprehensive nature. (IT 11)

"…So far no complain so we are satisfied…" (IT 1)

The above statements by the coordinators, it implies that teachers and authorities are satisfied with the graphical representation of text as well as the information that is printed on the students' reports in the various school categories.

In conclusion, these results imply that even though the selected schools use the same Students Information System, differences exist in terms of their usage and actuals users' satisfaction as far as the SIS is concerned. This finding is in line with Odhiambo (2003) who revealed that the creation of unstable networks is the result of lack of ICT policy among its users at Moi University, even though implemented; its benefits would not be felt equally among its users.

Discussions of Results

Determinants of the usage of the Free SHS Information System

From the study, teachers agreed that the Students Information System (SIS) helped them to easily enter their scores as teachers. This means that the interface of the SIS is easy to use. Hence, teachers' ability to use the SIS to enter students' scores. This was revealed by ICT coordinators, that the SIS has taken away a lot of work from the teachers as well as the form masters because they have the chance now to see all the performances of every student and to give the appropriate comment for each student. They also revealed that it has also taken away the old method of using paper in recording students' marks. This is in line with Roses, Hoppen and Henrique (2009) who claimed that examining the eminence of Information Technology service parts is gaining growing importance. This implies that the use of information

technology in recording data is becoming easier. It also helps to keep records up-to-date and at a glance, the students' academic performance is presented to enable both subject and form masters make a fair comment about the student unlike when they had to look for previous information about a student from papers. This is also in line with Rieh (2002) who claimed that functionally, information quality is information that is important, valuable, up-to-date, and precise. This means that information generated by a newly developed system should be able to satisfy the qualities outlined and should be generated on time so that it can be used to take a decision within a given institution.

Again, it was revealed from the study that, teachers find it difficult when they want to upload scores on Microsoft Excel onto the SIS. It can therefore be inferred that the teachers who find it difficult to upload students' scores on Microsoft Excel onto the SIS are not perfect enough to perform such an operation. This idea was stressed by the ICT Coordinators in the various schools. This is supported by Rouibah (2009) who established that training employee had a positive influence on Perceived Usefulness. This means that employee training plays a key role in information systems successful operation in an organization. This is because the training helps employees(teachers) to acquire the skill of using the system so that the full benefits can be realized by the institution.

User satisfaction determinants with the Free SHS Information System

Considering the user satisfaction determinants with the Free SHS Information System, it was indicated that the majority of the respondents disagreed that the SIS was not an error-free system. This shows that on average most of the teachers believed that the system is associated with some

form of error. This assertion was confirmed by the ICT coordinators that there are errors within the system, but these errors are marginal. However, from the views of the teachers, they are satisfied with the information that is produced by the SIS. This is in line with Welker (2008) who claims that the satisfaction for a particular type of Information System falls on the system performance quality in terms of functionality, convenience, ease of use, reliability, and other system parameters. This means that the satisfaction of a particular system depends on the qualities outlined and other system parameters. Therefore, for the schools to get better results from the SIS, these errors need to be fixed to get the full functionality of the SIS.

The difference that exists in the actual usage of the Free SHS Information System in terms of school category

The next research question that was also looked at was the difference that existed in the actual usage of the Free SHS Information System in terms of school category. Across all the statements, it was revealed that a significant difference existed in the actual usage of the Free SHS Information System in terms of school category. It can therefore be inferred that differences exist in the actual usage of the SIS in terms of school category because the grading system differ from one school to the other. For example, University Practice Senior High has 70% as a grade 'A' whilst in Wesley Girls Senior High, 80% and above represent a grade 'A'. This grading system according to the various ICT coordinators, is a decision that the school administration needs to decide. As to the reasons for this decision, none of the respondents was not in a position to explain. This is in line with Muniafu (2003) who contends that some universities follow not the standard system in various departments.

Accordingly, the implementation of systems is never on strategic action, hence, differs from one department to the other. On the other hand, Heeks (2002) well-thought-out the adoption and importation of systems to be a key reason for ICT failure in developing countries when implemented differently. The adoption of several methods and ways of handling ICT also negatively affects the value of Information System services and their implementation (Low,Chen,&Wu, 2011).

Differences that exist in the user satisfaction of the Free SHS Information System in terms of School category

Regarding the differences that exist in the user satisfaction of the Free SHS Information System in terms of school category, it was revealed that a substantial variation existed in the user satisfaction of the Free SHS Information System in terms of school category. This may be associated with the fact that difference existed in the actual usage of the Free SHS Information System in terms of school category. Therefore, the satisfaction derived by respondents in various schools from using the SIS differ. These results imply that even though the selected schools use the same Students Information System, differences existed in terms of their usage and actual user satisfaction as far as the SIS is concerned. This finding is in line with Odhiambo (2003) who revealed that it is the absence of ICT strategy that controlled to the development of undependable networks among its users at Moi University, even though executed, its gains would not be felt equally among its users.

Chapter Summary

This section investigated four research questions by using frequency tables, the Likert scales, the mean, and One-Way ANOVA. These questions

concerned the following: the determinants of the usage of the Free SHS Information System; the determinants of the user satisfaction of the system; the difference that exists in the actual usage of the Free SHS Information System in terms of school category; and whether or not there exists any difference in the user satisfaction of the Free SHS Information System in terms of school category. In this section, the results from the quantitative, as well as the qualitative parts of the research, indicate that, on average, the most of the participants was in agreement with the statements that were used in examining the first and second goals of the study. This indicated that most of the respondents, on average, agreed with the assertions that were used in examining the determinants of the usage and self-satisfaction of the Free SHS Information System. This can be traced from the findings, which showed that most of the participants agreed with the assertions. In contrast to the favorable opinions that instructors have expressed on the free SHS Information System, 45.4% of them (n=139) believed that the SIS is not an error-free system. Using a One-Way ANOVA, this research also investigated whether or not there was a change in the satisfaction level experienced by users of the Free SHS Information System concerning the kind of school they attend. Across all the statements, the findings, made it clear that there is a substantial variation that existed in the actual usage of the Free SHS Information System in terms of school category.

CHAPTER FIVE

SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

Introduction

In this chapter, the summary, conclusions, recommendations and suggestions for further research are given.

Summary of the Study

This study investigated the Free SHS Students' Information System Usage and its Satisfaction among selected Senior High Schools in the Cape Coast Metropolis. The purpose of the study was to investigate teachers' and ICT coordinators' usage and their satisfaction with the Free SHS Students' Information System among Senior High Schools in the Cape Coast Metropolis. Guided by the study are the following research questions:

1. What are the determinants of the usage of the Free SHS Information System?
2. What are the determinants of user satisfaction with the Free SHS Information System?
3. What difference exists in the actual usage of the Free SHS Information System in terms of school category?
4. What difference exists in the user satisfaction of the Free SHS Information System in terms of school category?

Hypothesis

H_0 There is no statistically significant difference in the actual usage of the Free SHS Information System in terms of school category.

H_{01} There is a statistically significant difference in the actual usage of the Free SHS Information System in terms of school category

H_{02} There is no statistically significant difference in user satisfaction with the Free SHS Information System in terms of school category.

H_{03} There is a statistically significant difference in user satisfaction with the Free SHS Information System in terms of school category**.**

The literature review was organized along with the theoretical and empirical review to guide the study. This study was guided by the updated DeLone and Mclean's Information System (IS) Success Model. The literature review focused on assessing the free Senior High School management information system usage and its satisfaction of school records among senior high schools in the Cape Coast Metropolis. One issue that came up during the review was regarding the factors determining the usage of a new Information System (IS) in an institution. The acceptance or rejection of a new Information System by users in an organization is one of the main factors that need to be considered. For this, user's attitude has been studied by several researchers in this field in the direction of the scheme and behavioral intention to use has affected people. Majority of the past researches on computer system impact were in line with user responsiveness. These researches partly deal with psychological response of workers Some of these studies dealt with the psychological reaction of workers. Strategy is the essence of the modern organization. Holistically, using computer system in development information and storing, and retrieving has aided operation cost reduction in organizations. Based on the literature review, it was identified that factors determining user satisfaction with a new Information System in an institution included satisfaction with Information Systems. Information System has been long used as the subject for additional research in the field of Management Information

Systems (MIS). The definition for user effectiveness is the accuracy and completeness with which users attain certain targets. System effectiveness measures the degree of wellness a given Information system attains its goals and objectives. Again, the two dimensions describe the system capacity to overlook irrelevant documents and retrieving relevant ones (Van Rijsbergen, 2000). User effort can be defined with no much difference to information-searching behaviour (Wilson, 2000). Based on the literature review, the difference in user satisfaction with a new Information System in terms of category includes information-systems operations. Another set of professionals who engage with the daily routine IT operations and administration is the information-systems professionals.

This study hired a descriptive survey design which aided to gather both quantitative and qualitative data and analysed both quantitative and qualitatively. The targeted population of this study constituted 1,154 teachers from eleven (11) Senior High Schools in the Cape Coast Municipality. A sample of 313 teachers and twenty-two (22) ICT coordinators or administrators were nominated for this study using proportional stratified random sampling and purposive sampling respectively. Finally, the data gathered were analysed by use of mean, standard deviation, frequency percentage and one-way ANOVA.

Summary of Key Findings

The following key finding arose from the study:

1. What are the determinants of the usage of the Free SHS Information System?

The study revealed that the Students Information System (SIS) helps teachers easily enter their students' scores and teachers can open their portal as a form master or mistress to give comments on their student's performance. Also, the teachers expressed that the SIS helps them to interpret students' scores entered correctly. However, they indicated that they find it difficult when they want to upload scores on Microsoft Excel onto the SIS. Some of the ICT coordinators interviewed also revealed that the SIS has taken away a lot of work from the teachers as well as the form masters because they have the chance now to see all the performances of every student to give the appropriate comment for each student. It has also taken away the old method of using paper in recording students' marks.

2. What are the determinants of user satisfaction with the Free SHS Information System?

   The study again revealed that the Students Information System (SIS) helps them to capture students' marks. Moreover, teachers revealed that the steps to be followed to use the SIS are clear. Meanwhile, the teachers disagreed with the fact that the Students Information System (SIS) is error-free. The ICT coordinators interviewed indicated that the system has errors in it and have complained to the providers. However, since the errors are marginal, it is controlled. For example, a student who registers for two courses and a student who registers for eight courses. They added that in terms of ranking, the system ranks the student who registered for only two (2) courses as the best performing student than the student who registered for the eight courses which

makes it unfair. Further, it was revealed that it is a new system and so it comes with its challenges but gradually once the bugs or errors are reported to the developers at times, they make the adjustment and changes. But then there are some errors still in there that are reported to the developers to solve. On the contrary, one of the ICT coordinators interviewed stated that so far, they have not encountered any errors except that internet connectivity sometimes poses a problem.

3. What difference exists in the actual usage of the Free SHS Information System in terms of school category?

   The study pointed out that there was a significant difference in the actual usage of the Free SHS Information System in terms of School Category.

4. What difference exists in the user satisfaction of the Free SHS Information System in terms of school category?

   Finally, the study showed that there was a substantial variation in user satisfaction with the Free SHS Information System in terms of School Category. This means that upon the usage of one Information system, the actual usage and user satisfaction would not be the same.

Conclusions

From the discussion so far, Students Information System (SIS) help teachers to perform many functions such as easily entering their students' scores, and opening their portal as a form master or mistress to give comments on their student's performance among others. Yet, teachers find it difficult when they want to upload scores on Microsoft Excel onto the SIS. The

implication is that there is inadequate training or workshops on the SIS for teachers.

Furthermore, it is concluded that the teachers disagreed with the fact that the Students Information System (SIS) is error-free because their challenges as far as the SIS is concerned have not been met. It is concluded that regardless of the schools where the respondents find themselves, the users of the SIS experience diverse challenges. Finally, even though the users of the SIS have the same system yet different satisfaction exist because of individual attitudes and desires towards the use of the system.

Recommendations

The following recommendations are made based on the findings of the study:

1. Since the study revealed that teachers find it difficult when they want to upload scores on Microsoft Excel onto the SIS, it is recommended that ICT coordinators and management of the selected schools should organise workshops or training for the users of the SIS to equip them utilise the SIS.
2. It is recommended to the service providers to fix all errors or challenges associated with the SIS regarding its usage.
3. Moreover, since there was substantial variation in the actual users of SIS in the school's category, it is therefore recommended that the service providers should make sure to go round the various schools to verify if the SIS is being used for its intended purpose.
4. Finally, since the study revealed that there was a significant difference in user satisfaction among the schools, it is recommended that the SIS

service providers develop the software in a way that will satisfy all senior high schools.

Suggestion for further research

There is the need for further research into usage of the Students Information System in entering students' scores by teachers within the SHS institutions in the Cape Coast metropolis. The work can also be done in other parts of the country to look at the levels of teachers' satisfaction in the use of the Students Information System among the various categories of senior high schools in Ghana.

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APPENDICES

APPENDIX A

UNIVERSITY OF CAPE COAST

DEPARTMENT OF MATHEMATICS AND ICT EDUCATION

QUESTIONNAIRE FOR TEACHERS

This study is being conducted to investigate Free SHS Students' Information System (SIS) usage and its satisfaction among schools in the Cape Coast Metropolis. Your assistance is therefore being sought in this study and your frank response to items on the questionnaire will be greatly appreciated. You are assured that your responses will be treated with outmost confidentiality and would be used solely for academic purposes. Thank you.

SECTION A: Demographics Data of Respondent

Please answer the following demographic questions.

1. Gender ☐ Male ☐ Female ☐

2. Age group

20-30 ☐ 31-40 ☐ 41-50 ☐ 45-54 ☐ 55+

3. Level of education

First Degree ☐

M.Ed. ☐

MPhil. ☐

PhD Degree ☐

4. How long have you been teaching in your school?

Less than 6 months ☐

1-5 years ☐

6-10 years ☐

10years or more ☐

Section B: Factors determining the usage of the Free SHS Information System

This section is designed to solicit information on factors determining the usage of the Free SHS Information System in the Cape Coast Metropolis. Please read from items 5-16 and carefully tick in the appropriate box [√]. **Indicate the degree of agreement or disagreement by ticking [√] the appropriate responses; Strongly Disagree (SD), Disagree (D), Uncertain (UN), Agree (A) and Strongly Agree (SA).**

No.	Statement	SD	D	UN	A	SA
5	The system helps me to easily download students' results.					
6	The Students Information System (SIS) help me to easily enter my scores as a teacher.					
7	I can open my portal as a form master or mistress to give comments to my student's performance.					
8	The Students Information System (SIS) supports the current windows operating system.					
9	The SIS helps to facilitate easy access to students' information.					
10	On the average, I use the SIS once a day.					
11	As a teacher, the SIS easily helps me to add students to my account.					
12	As a teacher, the SIS easily helps me to assign students to my subject.					
13	I often use the Microsoft Excel within SIS in entering students' scores.					
14	I find it difficult when I want to upload scores on Microsoft Excel onto the SIS.					

15	The SIS helps me as a teacher to generate efficient results for analysis.					
16	The SIS helps me to interpret students' scores entered correctly.					

Section C: Factors determining the user satisfaction of the Free SHS Information System

This section is designed to solicit information on the Factors determining the user satisfaction of the Free SHS Information System in the Cape Coast Metropolis. Please read items 17-27 and carefully tick in the appropriate box [√] **Indicate the degree of agreement or disagreement by ticking [√] the appropriate responses; Strongly Disagree (SD), Disagree (D), Uncertain (UN), Agree (A) and Strongly Agree (SA)**

No.	Statement	SD	D	UN	A	SA
17	The Students Information System (SIS) is error free.					
18	The Students Information System (SIS) helps to capture students' marks.					
19	The steps to be followed to use the SIS is clear.					
20	The SIS is user friendly.					
21	I feel satisfied with the information I generate from the SIS.					
22	I can use the SIS without any help from the ICT Coordinators.					
23	I can easily access the SIS on my phone.					
24	I am satisfied with the analysis of students results generated from the SIS.					
25	I like the way the SIS generate the					

	students reports.					
26	I am satisfied with the quick response of the SIS whenever I open it.					
27	I can easily locate my class whenever I open the SIS.					

Section D: Difference that exists In the Actual Usage of The Free SHS Information System in Terms of School Category.

This section is designed to solicit information on the Difference that exists In the Actual Usage of The Free SHS Information System in Terms of School Category in the Cape Coast Metropolis. Please read items 28-37 and carefully tick in the appropriate box [√]. **Indicate the degree of agreement or disagreement by ticking [√] the appropriate responses; Strongly Disagree (SD), Disagree (D), Uncertain (UN), Agree (A) and Strongly Agree (SA)**

No.	Statement	SD	D	UN	A	SA
28	The descriptions on the interface of the Students Information System (SIS) are designed to suit my school.					
29	The data displayed on the SIS can be used by the school to make decision.					
30	The total number of students within the school can be identified on the SIS.					
31	The SIS helps me to rank students according to their performance set by my school.					
32	The SIS help me to sort students according to the program run by the school.					
33	The SIS help me to sort students according to their gender within a class.					
34	The SIS help me to sort students according to their residential (Day or Boarding) status in the					

	school.					
35	I am able to use the SIS for its intended purposes in my school.					
36	The SIS help me to switch track anytime, according to the track in the school.					
37	The SIS is designed to meet the program requirement of the school.					

Section E: Difference that exists in the user satisfaction of the Free SHS Information System in terms of school category?

This section is designed to solicit information on the Difference that exists in the user satisfaction of The Free SHS Information System in Terms of School Category in the Cape Coast Metropolis. Please read items 38-46 and carefully tick in the appropriate box [√]. **Indicate the degree of agreement or disagreement by ticking [√] the appropriate responses; Strongly Disagree (SD), Disagree (D), Uncertain (UN), Agree (A) and Strongly Agree (SA)**

No.	Statement	SD	D	UN	A	SA
38	I am satisfied with the recommendation of the Students Information System (SIS) in my school.					
39	I am satisfied with how I share information with my colleague teachers on the SIS.					
40	I am satisfied with the help that teachers have been getting from the technical team.					
41	The user interface of the SIS measures up to my school standard.					
42	I can see that every teacher in my school is satisfied with how text is displayed on the SIS.					

43	My school is satisfied with the information printed from the SIS.					
44	The information printed from the SIS is relevant to my school.					
45	My school is satisfied with the support services that the teachers are receiving from the free SIS secretariat.					
46	My school will rate the satisfaction on how teachers use the SIS in entering students' scores as "excellent".					
47	My school is satisfied with the students reports printed from the SIS.					
48	My teachers are satisfied with how fast the SIS perform their request.					
49	My school is satisfied on how the SIS improves communication among school authorities.					
50	My school is satisfied on how the SIS has helped to improve the work of the teachers in general.					

Thank you

APPENDIX B

UNIVERSITY OF CAPE COAST

DEPARTMENT OF MATHEMATICS AND ICT EDUCATION

INTERVIEW FOR ICT COORDINATORS

This study is being conducted to investigate Free SHS Students' Information System (SIS) usage and its satisfaction among schools in Cape Coast metropolis. Your assistance is therefore being sought in this study and your frank response to this interview will be greatly appreciated. You are assured that your responses will be treated with outmost confidentiality and would be used solely for academic purposes. Thank you.

SECTION A: Bio-Data

Please can you provide me answers to the following bio-data?

1. Gender Male ☐ Female ☐

2. What is your Level of education?

First Degree ☐

M.Ed. ☐

MPhil. ☐

PhD Degree ☐

3. How long have you been teaching in your school?

Less than 6 months ☐ 1-5 years ☐ 6-10 years ☐ 10years or more

1. What are your views on the factors that determine the usage of the Free SHS Information System regarding;

a. Using the SIS to download students' results?

b. Form teachers (masters) using the SIS to give comment on students' performance?

c. Teachers using the SIS to enter students' scores?

d. The number of times teachers use the Ms. Excel within the SIS in entering students' scores?

e. The difficulties teachers face in uploading scores on Ms. Excel onto the SIS?

f. How does the current windows operating system (10) support the SIS application?

g. How easy does the SIS help you in access students' information?

h. How easy is the SIS to teachers in adding students to their account?

i. How easy is the SIS to teachers in assigning students to their subjects?

j. How the SIS help teachers to generate efficient results for analysis?

k. How the SIS help teachers to interpret students' scores correctly?

l. How regular do teachers use the SIS?

2. In your view, what factors determine the user satisfaction of the Free SHS Information System concerning;

a. The SIS being free from errors?

b. How the SIS helps to capture students' marks?

c. How clear is the steps to be followed in the usage of the SIS?

d. How friendly the SIS is in terms of use?

e. How teachers can use the SIS without the help of ICT coordinators?

f. How easily teachers can access the SIS on their phones?

g. How satisfactory teachers are regarding the analysis of student's results generated from the SIS?

h. The way the SIS generate students report (how do you like it)?

i. How quick does the SIS respond whenever you open it?

j. How easy do teachers locate their class whenever they open the SIS?

3. In your view, what is the difference that exist in the actual usage of the Free SHS Information System in terms of your school concerning;

a. How do the descriptions on the interface of the SIS allow you to identify your school?

b. How the data displayed on the SIS can be used by your school to take decision?

c. How the total number of students within your school can be identified on the SIS?

d. How the SIS helps to rank students according to their performance set by your school?

e. How the SIS help to sort students according to the programs run by your school?

f. How the SIS help to sort students according to their gender in a class?

g. How the SIS help to sort students according to their residential status in your school (Day or Boarding)?

h. How the SIS is used for its intended purpose in your school?

i. How the SIS can be used to switch track according to the track in your school (if any)?

j. How the SIS is designed to meet the program requirement of the school?

4. In your view, what is the difference that exists in the user satisfaction of the Free SHS Information System in terms of your school concerning the following:

a. How satisfied are you with the use of the SIS in your school?

b. How satisfied are you regarding the sharing of information with your colleagues on the SIS?

c. How satisfied are you on the technical support that you give to your teachers in your school?

d. How satisfied are teachers regarding how text is displayed on the SIS?

e. How satisfied is your school with the information printed from the SIS?

f. How satisfactory your school is, with the support services the teachers are receiving from SIS secretariat?

g. How satisfactory your school is regarding the students reports printed from the SIS?

h. How satisfied your school rate teachers in the use of the SIS in entering students' scores (excellent, very good, good)?

i. How satisfied are the teachers on the fast performance of the SIS whenever they issue command (request)?

j. How satisfied is your school on how the SIS improves communication among your school authorities?

k. How satisfied is your school on how the SIS has helped to improve the work of the teachers in general?

Thank you for your cooperation.