

# Mixed Method Study of Stakeholders' Perspectives toward the Newly Introduced Students' Information System at the Senior High School Level

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## ABSTRACT

The study examined the utilization of the Students' Information System (SIS) within public Senior High Schools in the Cape Coast Metropolis. Adopting a mixed method convergent parallel research design, the study sampled 306 teachers and 22 ICT coordinators through proportionate stratified and purposive sampling techniques respectively. Findings indicate that the SIS facilitates teachers in efficiently inputting students' scores and providing feedback through their portals. While teachers perceive the system as aiding in accurately interpreting students' scores, they encounter challenges when attempting to upload scores from Microsoft Excel onto the SIS. Despite its benefits, teachers disagree that the SIS is entirely error-free. The study concludes that though the SIS streamlines various tasks for teachers, such as score entry and feedback provision, issues persist with uploading scores from Excel, possibly due to inadequate training. Thus, the study recommends organizing training sessions or workshops to enhance teachers' proficiency in utilizing the SIS, particularly concerning the upload process from Excel.

## INTRODUCTION

An information system is a collection of activities, procedures, methods, technology, and people that are organized to get valuable related information (Asare, 2019). A system is said to be best when that system provides useful information and user interaction at all levels. This system must also be able to store information until it is required by the user. It should be capable of processing data and responding to its end-user by providing the answers to all sets of challenges. Information systems should best interact and communicate with the end-user to provide the accurate required information (Knight & Silk, 2000). Information System is a set of components that interact to produce information, which includes hardware, software, data, procedures, and people, whereas these components can be found in every information system (Kroenke, 2007).

The main elements of Information System consist of hardware, software, data, procedures, and people. Hardware refers to computers, storage disks, keyboards, and communication devices while the software is relevant to word-processing programs (Davies, 2009). Data or information is included in texts, words, sentences, and paragraphs in reports. According to Kroenke (2007) and Davies (2009), the important role of Information System is not only computers, programs, and communication devices, but it also focuses on the

assembly of hardware, software, data, procedures, and people; in other words, information system means a system of communication between people. Besides, Bright and Asare (2019) claimed that there are many roles of information systems in an organization, for example, to increase an operation's efficiency, to process business transactions, to provide decision support, to monitor and evaluate employees' performance, and to maintain documentation and communication channels. Regarding this study, the emphasis is on teachers and ICT administrators' level of satisfaction in the usage of students' information system in the selected schools in Cape Coast Metropolis.

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 improve their competitiveness by enhancing productivity, innovation, quality, and flexibility of services at the individual and organizational levels (Naranjo, 2009). According to this situation, information processing capabilities are challenged by additional and diverse demands in an organization, such as speed and reliability. To address this challenge, organizations develop and apply more sophisticated and comprehensive Information System. A computer-based information system (IS) is an important fast-growing technological innovation in some countries and most institutions around the world (Gonzalez, Gasco & Llopis, 2006).

Measuring the usage of an Information System is a broad concept that can be considered from several perspectives. In the case of voluntary use, the actual use of an Information System may be an appropriate success measure within an institution to determine the usage of a new Information System in terms of user acceptance or rejection (Gonzalez, Gasco & Llopis, 2006). User acceptance or rejection of the technologies is considered the main challenge facing the adoption of information systems in organizations (Yee, 2007; Shih & Huang, 2009). This study therefore examines the interest of the academic staff in using and accepting a new Information System. This study intended to help 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), complexity had a significantly negative impact on the intention to use.

The quality of a system refers to the usability and efficiency of a newly introduced Information System (DeLone & McLean, 2003). This is said to measure the desirable characteristics of an information system. System quality also describes the "good" quality of the information system with its operational characteristics. System quality is a measure of the information processing itself that includes software and data components, and a measure of the technical soundness of the system (Tessier et al., 2002). System quality is also concerned with whether there are no bugs or errors in the system, the consistency of the user interface, the ease of use, the quality of the documentation, and sometimes the quality and maintainability of the program code. According to Kinney (2000), Lang and Welker (2000), the satisfaction for a particular type of Information System depends on the quality of the system performance in terms of reliability, convenience, ease of use, functionality, and other system parameters. At the same time, DeLone and McLean (2003) measured the quality of the system in terms of ease of use, functionality, reliability, flexibility, data quality, portability, integration, and importance. It also focuses on the information product instead, and characteristics at the semantic level, thus, the success of the information in conveying the intended meaning (Peter & McLean, 2009).

According to Lang and Welker (2000) system quality is thought to be an important motivating factor for

people to use their systems and derive any benefits essential for companies to gain a return on their investment. 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 researchers determine the factors needed to increase respondent's satisfaction with the Information System introduced in their various institution. Some examples of system qualities included the realization of user requirements, usefulness of the system features and functions, data and system accuracy. Information quality refers to the content issues and characteristics of the information systems output (DeLone & McLean, 2003).

According to Rieh (2012), information quality is information that is good, useful, current, and accurate. Also, Azemi, Zaidi and Hussin (2018) has defined information quality as the degree to which;

1. measurement methods used to prepare information can represent what a decision-maker wants to know (information relevance) and
2. the stated methods have been competently applied and results truthfully displayed (information reliability or credibility).

The above definitions mean that information quality lies in how information is perceived and used by customer within an institution. Information quality is an important aspect of information management as it determines the quality of information that is produced and developed in an organization. The high quality of information produced can improve the processes that go on within the institution as well as a competitive advantage for the organization. The quality of the information produced also becomes increasingly important and more satisfying with the increase in data collection and storage in an organization, and the drawing out of data for institutional usage. Regarding this current study, the researcher determines quality of information that the students' information system bring out which are different from other information system used.

Service quality is a measure of the quality of information system services. This also refers to the quality of support rendered by the information system's developer. Generally, service quality is a tool developed to assess general service quality for marketing researchers (Delone & McLean, 2003). Alzahrani, Mahmud, Ramayah, Alfarraj and Alalwan (2019) enhanced Delone and McLean (2003) to include Service quality as one of the determinants to information system effectiveness. Service quality is a support of users by the IS department, often measured by the responsiveness, reliability, and empathy of the support organization (Peter & McLean, 2009). Analyzing the effectiveness of IT service components is becoming increasingly important (Roses, Hoppen, & Henrique, 2008). The authors developed five dimensions of service quality that were adopted 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) which contains all the required details by the user. Ideally, all the information needed for a particular decision should be available. Educational institutions and other institutions worldwide continue to embrace the usage of Information and Communication Technology (ICT). This is because of the need to achieve efficiency and effectiveness in managing information. Management Information System (MIS) can be split into three (3) components (Kumar, 2006; Gabriel, 2012). Kumar (2006) then expresses that management as the process through which preparation, organize, initiate and measure of operations within a business is carried out. Similarly, management was described as the process of utilizing strategies and techniques to effectively and efficiently utilize an organization's resources in order to attain specific objectives (Ottih, 2015).

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 provides managers with the information needed to manage organizations efficiently and effectively. Its fundamental goal is to create and implement procedures, processes, and routines that provide appropriate detailed reports on time, consistent and accurate manner. According to Visscher, Wild, and Fung (2001), in the field of management, MIS is critical, in determining a course of action and take action to get the system in control. MIS is also relevant in non-programmed decisions as it provides support by supplying information for the search, analysis, evaluation and implementation process of decision making (Obi, 2003). These systems can give users with source data, analytical 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 decisions regarding planning, policy making, and evaluation (Bober, 2001). However according to Gurr (2000), these methods can help the school manager establish the school's goals, develop strategic plans, allocate resources, evaluate staff performance, and determine organizational success.

In Africa, several countries have acknowledged the need of providing technical assistance to teachers in order to help them use ICT in the classroom (Yang & Wang, 2012). Also, In the use of ICT in education, teachers' readiness and skills in using ICT are critical (Agbatogun, 2012). Teachers must have appropriate ICT skills and a high sense of confidence in order to implement technology in the classroom (Hermans, Tondeur, Van -Braak, & Valcke, 2008). Furthermore, in order to use ICT effectively in their instructional process, teachers must understand its pedagogical purpose. According to Winzenried, Dalgarno, and Tinkler (2010), instructors who have completed an ICT course are more effective in employing technical tools in their classrooms than those who have not. They went on to say that teachers who didn't have enough confidence in themselves avoided using ICT.

According to Warwick and Kershner (2008), Schools had employed a range of techniques to provide additional professional development for teachers beyond basic skills training. They assert that teachers should be aware of the importance and benefits 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 developing transversal abilities that encourage interpersonal skills, problem solving, self-reliance, responsibility, and the ability for reflection and initiative, as well as improving their collaborative learning skills. These are all key values that students must attain in a dynamic teaching and learning process (Ghavifekr, 2014).

In the early 1970s, the Malaysian government began incorporating ICT into the teaching and learning activities. This is because of the significance of the technological literacy that generated critical-thinking workers capable of facing and contributing in the global economy (Hamidi, Meshkat, Rezaee, & Jafari, 2011). Accordingly, computer lab, internet connection, smart whiteboards, LCDs, and other ICT tools and equipment were installed in many schools. In October 2011, Malaysia's Ministry of Education initiated a comprehensive evaluation of the country's educational system.

The government created a new national education strategy to boost educational standards; the most recent one is the Education Blueprint 2013-2025. This blueprint puts out a strategy for Malaysia's educational system to undergo long-term development until 2025 (Ministry of Education, 2012). The plan to increase the role of ICT in the entire educational system 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 quality learning in Malaysia by giving internet access and a virtual learning environment via 1BestariNet to all Malaysian schools by 2013 (Ministry of Education, 2012). It ensures that ICT may be used to its full potential for self-guided learning.

Furthermore, information is a stream of data that has been processed in such a way that it is understandable to its users (Ajayi & Omirin, 2007). Simply put, information is data that has been arranged and given meaning (Kumar, 2006). On the other hand, a system is a collection of disparate but interconnected and interdependent parts that work together to achieve a common goal, and so a collection of elements working toward a common goal (Gabriel, 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, 2007). Similarly, MIS is a system for converting data from internal and external sources into information and communicating that information in a timely and effective manner to managers at all levels (Ajayi & Omirin, 2007).

The use of ICT in the educational institutions has 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, 2002). Again, MIS can provide administrators and instructors with the data they need to make informed decisions about planning, policy, and evaluation (Bober, 2001). Additionally, Gurr (2000) claims that these methods can aid the school manager in identifying the school's goals, developing strategic plans, allocating resources, and assessing staff and organizational success (Maki, 2008).

The use of ICT in many African countries has recognized the importance of technical support to assist teachers and administrators in the classrooms and offices respectively (Yang & Wang, 2012). Also, teachers' willingness and skills in using ICT are critical in the use of ICT in education (Agbatogun, 2012). Similarly, in Ghana, the government has promoted the use of ICT in education as a means of improving educational outcomes. The Ghana Education Service's Strategic Plans (2003-2015 and 2010-2020) both emphasized the necessity for ICT in education to help accomplish the Education Strategic Plan's objectives, thus access, quality, gender equality, and inclusiveness, as well as educational management, are all issues that need to be addressed (Kwache, 2007). Consequently, the government has established the ICT for Accelerated Development (ICT4AD) Policy (2003), which outlined the plans and strategies in a framework for how ICTs might be used to help Ghana achieve its national goal of becoming an information and knowledge-driven ICT literate nation (Government of Ghana, 2008).

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 meet the ICT demands in education. Similarly, the Basic School Computerization Policy was established in 2011 with the goal of integrating computers and e-learning throughout the educational system. As a result, in 2012, the Ministry of Education, in collaboration with LG company, a Ghanaian ICT business, launched the teacher laptop and ICT project, in which teachers were trained in ICT and given laptops to use for research, teaching, and learning in a range of subject areas. The use of ICT in teaching and learning is critical because it ensures unrestricted access to relevant information and topic development, as well as the supply of efficient and effective solutions to address students' individual variations, including those with special needs (Bede, Termit & Fong 2015).

In the central region, 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, Regional Office, 2008). In September, 2019, 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 researchers aimed to investigate stakeholders' use and level satisfaction of the new Students Information System (SIS) in Senior High Schools in the Cape

Coast Metropolis.

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?

## RESEARCH METHODS

A mixed method convergent parallel research design was used for this study since it allows you to

simultaneously collect both quantitative and qualitative data, integrate the result to provide a holistic understanding of the research problem (Kothari, 2004). Hence, a holistic understanding of the free SHS students' information system usage and its satisfaction among schools in Cape Coast Metropolis. Cohen, Manion and Morrison (2008) indicate that a mixed method convergent parallel research design look at individuals, groups, institutions, method, and materials in order to describe, compare, contrast, classify, analyse and interpret the entities and the events that constitute their various fields of inquiry.

### Population/ Sample and Sampling Procedures

The population for this study included ICT administrators and teachers in the 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. 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.

Taking into consideration the overall purpose, research questions posed, and the research design selected for this study, the sample selected included three hundred and six (306) teachers and twenty-two (22) ICT administrators from eleven (11) Senior High Schools. Ensuring confidentiality and anonymity, the researcher decided to withhold the names of the schools. To begin with, the researchers employed purposive sampling method to select schools and ICT administrators (Orji, Madu & Nwachukwu, 2015). This is because the selected schools use the SIS in managing their students' academic data.

The proportional stratified sampling technique was employed to select teachers because they were already grouped in their various schools in terms of program offered and departments. The researchers 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 researchers increased the number to 313. This was to take care of the possibility of some teachers' not responding to the questionnaire. As a result, the researchers 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. Here, 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 school A, the total number of teachers 150 was denominated by the grand total teachers' population (1154) multiplied by the sample size (313) which gave the researchers the desired sample (40) (see Table 1). Specifically, the following calculations were done:

School A is obtained by	$150 \div 1154 \times 313 = 40.68$ or 41
School B is obtained by	$95 \div 1154 \times 313 = 25.76$ or 26
School C is obtained by	$103 \div 1154 \times 313 = 27.93$ or 28
School D is obtained by	$114 \div 1154 \times 313 = 30.92$ or 31
School E is obtained by	$71 \div 1154 \times 313 = 19.25$ or 19
School F is obtained by	$77 \div 1154 \times 313 = 20.88$ or 21
School G is obtained by	$147 \div 1154 \times 313 = 39.61$ or 40
School H is obtained by	$114 \div 1154 \times 313 = 30.92$ or 31
School I is obtained by	$88 \div 1154 \times 313 = 23.86$ or 24
School J is obtained by	$77 \div 1154 \times 313 = 20.88$ or 21
School K	$115 \div 1154 \times 313 = 31.19$ or 31

Table 1- Teachers Sampled Based on Each School

Name of Schools	No. of teachers Sampled
A	41
B	26
C	28
D	31
E	19
F	21
G	40
H	31
I	24
J	21
K	31
Total	313

Source: Field survey (2023)

The sample size calculations were done on the basis of the various selected schools represented in Table 1. 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). 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 researchers. The researchers 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 School A. Overall, accessible population of 306 teachers were used for the study since 33 instead of 40 teachers from School A took part in the study.

The ICT administrators are pertinent to the study because they supervise the use of the information system. Thus, they are always involved in any updates that come as far as the SIS is concerned. Also, they (ICT administrators) attend training and workshops on the use of the SIS and enter students' marks using the same SIS database. Finally, the ICT administrators were needed because they were in charge of students' information system in the various schools. Therefore, the researchers see them to be in the right position to give the needful information regarding the study.

A self-developed questionnaire and a semi-structured interview guide were the instruments used to collect data for this study. 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 researchers themselves.

First of all, a questionnaire titled "The free SHS information system usage and its satisfaction of school records in SHS in the Cape Coast Metropolis" was designed by the researchers. The use of the questionnaire enabled the researchers 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. 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.

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 and the determinants of the user satisfaction of the Free SHS Information System. 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 and the determinants of the user satisfaction of the Free SHS Information System in relation to school category which the researchers did not capture in the questionnaire. The use of the questionnaire also offered teachers a higher degree of confidence that their information would remain confidential.

### **Semi-Structured Interview**

The semi-structured interview guide was used to gather data from the ICT administrators via face-to-face interactions. These (ICT administrators) were interviewed on the research questions posed. This is because the researchers wanted to know whether the teachers' findings would agree to the opinions of the ICT administrators regarding the usage of the SIS. The ICT administrators were interviewed on the determinants of the usage of the Free SHS Information System and the determinants of the user satisfaction of the Free SHS Information System

### **Validity and reliability/Pre-testing of Instruments**

The questionnaire was pre-tested at the N. A. Senior High School and W. A. Senior High School in the



Central and Greater Accra Region respectively. The N. A. Senior High School and W. A. 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 N. A. Senior High School and W.A. Senior High School were selected because they use the same Student Information System.

In this pre-test, the internal consistency was used to determine the reliability of the instrument. A multi-item test where all the items are intended to measure the same variable was applied to obtain Cronbach's alpha ( $\alpha$ ) values for section B and C, recording 0.706 and 0.910 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 researchers to find the core consistency of the questionnaire items. The outcome was a sign of a reliable instrument. This permitted the researchers to generate the questionnaire which was best to elicit responses.

### **Data Collection Procedure**

With an approval letter from the Department of Mathematics and ICT Education of the University of Cape Coast. A letter was sent to the headmasters/mistresses of the selected schools. With their approval, the researchers were introduced to the staff members by the headmaster/mistress of the schools. Again, the academic heads made the teachers aware that this study was for academic purposes. The questionnaire was given to the teachers who were selected. These teachers were informed on the research purpose before the questionnaires were administered to them. The questionnaires were collected 30 minutes after they were administered to 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. Overall, 22 interview sessions were held.

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

## **PRESENTATION AND DISCUSSION OF KEY FINDINGS**

The following key finding emerged from the study;

### **1. Research question one: What are the determinants of the usage of the SHS Information System?**

The study revealed that the Students Information System (SIS) help the teachers to easily enter their students' scores, teachers can open their portal as a form master or mistress to give comments to 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, indeed, it is helpful.

Table 2: 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.	22 (7.2)	79 (25.8)	86 (28.1)	79 (25.8)	40 (13.1)	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 (2023)

Table 2 describes the determinants of the usage of the Free SHS information system. The results presented reveal that, 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, majority of the teachers use the system to source information on students' results (M=3.71; SD=1.08). Concerning the use of the Students Information System (SIS) by teachers to enter scores, the outcomes show that the vast number of the participants 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, majority 72.9% (n=223) of respondents agreed 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 indicated, "the SIS helps to facilitate easy access to students' information". Though not all the teachers agree that they can open their portal as form masters to comment on their student's performance, the outcomes from Table 2 indicate that 74.8% (n=229) of the teachers approved that they could 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 teachers could open their portal to give comments on their student's performance as form masters (M= 3.94; SD=.95).

As shown in Table 2, averagely 43% (n=130) of the teachers indicate that they use the SIS once a day. This implies that less than half of the teachers use the SIS once a day. When it comes to the difficulties of adding students to teachers' accounts and assigning them to teachers' subjects, a little more than half of the teachers 59.2 % (n= 181) agreed that the SIS makes it simple for them to add students to their accounts and allocate them to their subject. Majority 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, Table 2 shows majority 82.3% (n=252) of the teachers agreed that the SIS helps them to interpret students' scores correctly entered. A greater number of the teachers consider the SIS as helpful to them to interpret students' scores entered correctly (M=3.99; SD=.84).

Table 3: 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 familiar 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 (2023)

The determinants of the usage of free Senior High School Information Systems' results from the sub-themes generated from the qualitative data are presented below;

### **SIS in scores entering**

The ICT coordinators interviewed revealed that the introduction of the free SHS information system had taken away a lot of workloads from them as well as 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 user friendly even on their phones and laptops.

### **Opening portal for form master or mistress**

Regarding the usage of the system by form masters and mistress, the ICT coordinators revealed that form masters can open their portal to give comments on their student's performance. They also revealed that initially form masters 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 free SIS, thus, the SIS had made it simpler to key in students' results. They revealed that the SIS is easy to use in terms of opening the portal to comment on students' performance. This is because one needs not to take any record home for entry. Specifically, it was revealed that;

*"...The SIS has not given us (form masters) any challenge so far..." (IT 6)*

### **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 knowledge on the use of Ms Excel. For this reason, 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

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.

### 2. Research question two: What are the determinants of the user satisfaction of the Free SHS Information System?

The study revealed that the Students Information System (SIS) helps teachers to capture students' marks. Also, teachers revealed that the steps to be followed to use the SIS is clear. Meanwhile, the teachers disagreed to the fact that the Students Information System (SIS) is error free. The ICT coordinators interviewed clearly indicated that there were errors in the system which have been complained to the providers. But the error is marginal, so we are managing it. For instance, a student who registers two courses and a student who registers 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 was a new system and so it come with its own challenges but gradually once reported to the developers, at times, they make the adjustment and changes. But then, there are still some errors that need to be worked on. Contrary, one of the ICT coordinators interviewed stated that: So far, we have not encountered any errors is only internet connectivity that normally pose a problem.

Table 4: 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 (2023)

Table 4 explains the various factors that come into play when assessing individual's level of satisfaction with the use of Free SHS information system.

The study revealed that less than half of the teachers 45.4% (n=139) disagree that the free SHS Information System was not an error-free system. This implies that some portion of the teachers perceive that the system is associated with some form of mistake (M=2.67; SD= 1.12). However, Table 4 shows that majority 88.2 % (n=270) of the teacher agreed that the Students Information System (SIS) helps them to capture students' marks. Again, it was revealed 72.8% (n=223) agreed that the steps needed to be performed to use the SIS are straightforward. This indicated that a bigger proportion of the teachers view the procedures in operating the SIS as clear and unambiguous. Also, it was indicated that the SIS was user-friendly, majority 76.1% (n=233) of the teachers agree that the SIS is user-friendly, and can be use without any difficulty.

In addition, responding to whether or not the teachers are satisfied with the information that is produced by the SIS, majority 71% (n=217) of the teachers agreed 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 teachers agreed that they were able to use 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

72.2% (n=221) can access the SIS on their phones. Concerning the analysis of students' results generated from the SIS, the findings indicate that most of the teachers 78.4%, (n=240) agree that the system can assist teachers in analyzing the results of their students. Equivalent number 78.7% (n=241) of the teachers agreed 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, 215, (70.3%) agree that they are okay with responses provided by the system whenever they opened it. Lastly, Table 4 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 5: 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 (2023)

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 study revealed that ICT coordinators were satisfied with the use of SIS to enter student scores. ICT coordinators were asked to speak about their level of satisfaction with the use of the system concerning capturing student marks. From the coordinators, the system makes it easy for them to record the scores of their students. However, they indicated that the difficulty comes when they are translating these scores to percentages. One of the coordinators said:

*"...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**

Majority of ICT coordinators who were interviewed shared similar perspective. It was revealed that;

*“...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 ICT coordinators revealed that the class schedule on the SIS was well-organized and easy to read. One of the ICT coordinators 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 well-arranged and easy to find.

### **Errors in the use of the SIS**

The study 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 courses 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.

## **CONCLUSIONS**

It is concluded that though Students Information System (SIS) help the teachers to perform many functions such as easily enter their students’ scores, opening their portal as a form master or mistress to give comments to their student’s performance among other. Yet, teachers find it difficult when they want to upload scores on Microsoft Excel onto the SIS. This is perhaps, inadequate training or workshops on the SIS for teachers.

Further, it is concluded that the teachers disagreed to the fact that the Students Information System (SIS) is



error free because their challenges as far as the SIS is concern have not been met. Moreover, it is concluded that regardless of the setting the users of the SIS experience their own challenges.

Finally, it is concluded that even though the users of the SIS have the same system yet differences satisfactory level due to individual attitudes and desire towards the use of the system.

## RECOMMENDATIONS

The following recommendations were made based on the findings of the study.

1. It is recommended that ICT coordinators and management of the selected schools should organise workshop or training programmes for the users of the SIS to equip them fully.
2. It is recommended to the service providers to fix all errors or challenges the SIS brings based on schools.

## SUGGESTION FOR FURTHER RESEARCH

It is suggested that future research should focus on how the service providers of the SIS liaise with the ICT coordinators in the various Senior High Schools in achieving the aim of the Free Senior High School Information Systems in the second cycle institutions.

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