

## ICT Resource Accessibility and Competencies in Usage After the COVID-19 Partial Closure of Pre-tertiary Schools in Ghana: Administrators' Perspective

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**Abstract:** *School administrators' technological competencies serve as an essential element in school excellence. As a lead for curriculum implementation, school administrators anchor technological integration in the school settings and operations, curriculum and pedagogy and create an enabling environment for ICT development competencies between and among teachers and students. As a result, this study aimed to investigate the ICT resource accessibility and pre-tertiary administrators' competencies in usage after the covid-19 partial closure of schools in Ghana. The study used a sequential explanatory mixed-method approach and a descriptive survey design. The target population was 70 Public Senior High School (PSHS) administrators in the five in the Birim Central Municipality. The census survey was used to include all the 70 PSHS administrators, expert purposive sampling technique used for selection of 10 respondents to be interviewed, while the 60 PSHS were required to complete the questionnaire. The study revealed that computers were the most accessible ICT equipment in the school but were without internet accessibility and connectivity for administrative work. Furthermore, the study showed that school administrators had a low level of competency in using the Microsoft Office suite and internet application tools. Furthermore, ICT accessibility and competency can statistically predict the use of ICT by school administrators to facilitate administrative work. As a result, there is statistically significant impact of administrators' ICT accessibility and competency on the use of ICT in the SHSs in the Birim Central Municipality. Therefore, school administrators need to pursue competency-based programmes in ICT because the confidence in using a system is directly related to the user's competence in using the technology system, which translates into perceived ease of use.*

**Keywords:** ICT resource accessibility, technology acceptance model, perceived usefulness, perceived ease of use, competence in ICT Usage, COVID-19

## **Introduction**

Changes occur at an uneven pace in any growth-oriented industry, and the educational sector is no exception to this phenomenon. Rapid growth in education has made governance in the academic sector a very complex task (Adali & Onuma, 2013). Considering the rate of change as an end product of the Covid-19 on the educational landscape, it is expedient for academic administrators to ensure an effective management system that enhances organizational productivity. Regardless of the level, educational institutions were asked to shut down to curb the frequency of personal contact to mitigate the national-wide spread of the coronavirus. Education was not caged nor restricted; instead, the intervention and innovations were implemented to create a new path for development in the face of challenges. An opened door was made to ascertain how responsive and ready educators and administrators of schools were to find innovative ways of educating learners. Without efficient and effective school administration, the aims and objectives of any educational system cannot be achieved (Makewa et al., 2013) because this pandemic carried for immediate intervention and path to continue educating our students.

According to Chaka (2008), introducing technological resources depicts an effective management system in the era of technology. He describes technology as applying knowledge to achieve particular goals or solutions to specific problems. This undoubtedly involves the deployment and exploitation of Information and Communication Technology (ICT) in facilitating and accelerating administrative processes in schools. Specifically, ICT has made a profound and remarkable impact on

the quality of teaching, learning, and research, compelling school administrators and educators to carefully analyze their schools' academic, social, and administrative needs.

Ultimately, ICT provides several facilities and possibilities for educational administrators to perform their tasks with ease (Krishnaveni & Meenakumari, 2010). This statement implies that ICT creates avenues which enable school administrators to perform their functions ranging from general administration, library system, payroll and financial accounting, administration of student data, and inventory management to personnel records maintenance. Significantly, ICT is used in preparing timetables of different classes so that the lessons can run concurrently without instructional time clashes or loss, classroom space, teachers and students clashing and fighting to survive amid a scarcity of available educational resources. Using ICT for administrative functions is based on the premise that school administrators are exposed to and would have to deal with a lot of information from students, parents, staff, Ghana Education Service (GES), affiliated institutions, and other stakeholders in the performance of their duties. Administrators make many decisions based on information available in the past, present, and expected future and therefore need to use ICT to manage their data efficiently. In addition, the maintenance of student and staff records, communication and document management are paramount; hence school administrators need to employ ICTs in their administrative operations (Organisation for Economic Cooperation and Development, 2009f).

Despite these massive benefits ICT presents to its users, many school educators and administrators, mainly in Africa, particularly Ghana, are still disadvantaged to

a large extent and seemingly isolated within the global village (Makewa et al., 2013). Gray and Smith (2007) observed that the twenty-first-century principal administrator faces numerous challenges emanating from the technology. A significant drawback of using ICT within Ghanaian schools is that computers are expensive, and the cost of acquiring hardware and software is high. To this end, Pelgrum (2001) stated that ICT would be the single most significant curriculum budget cost in most schools. This statement is true because years after introducing ICT courses to the curriculum, many schools in Ghana are incapable of purchasing computers or maintaining technologies for ICT lessons (Sey, 2013). Another challenge likely inhibiting the full adoption of ICT usage in Ghanaian schools is the sporadic power cuts. Ghana, like many African countries, suffers the rationing of electricity power. ICTs are electronic devices which require a constant supply of electricity. In power cuts, computers might get damaged, and users may lose relevant data. School administrators and teachers interested in using ICTs will have no option but to resort to the traditional way of doing things. Sey (2013) affirms that although some schools in the Ga South Municipality had access to computers, none had access to the internet with frequent intermittent power fluctuations and light-outs. However, school administrators complained of irregular power supply as a challenge hindering students' and teachers' ability to use available computers efficiently. Some computers malfunctioned due to frequent power failures. However, UNDP (2010) contends that these challenges rest on the lack of critical drive and strategies to harness the full potential of ICT in education. The ICT for Accelerated Development [ICT4AD] introduced and consequently resulted in the "ICT in Education Policy in Ghana (Ministry of Education, 2008). Phase I of the implementation of this policy "ensures a

system-wide and institutional readiness to use ICT for teaching, learning and administration", must ensure:

- i. building of an education and training system that supports ICT integration in teaching and learning,
- ii. building teachers' and managers' confidence in the use of ICT,
- iii. building a framework for competencies for teacher development in the integration of ICT into the curriculum,
- iv. establishing an ICT presence in the school.

Phase II ensures system-wide integration of ICT into teaching and learning; while phase III provides ICT integration at all levels of the education system, be it management, teaching, learning and administration. In all these phases, there is an emphasis on the need to integrate ICT in the administration of schools. Yet, limited knowledge exists on the competencies of school administrators who act as the gatekeepers for the intrusion, accessibility and utilization of technological resources in the schools. It is an inevitable fact that the leadership roles of administrators, leadership styles adopted by administrators and the leadership support, values and beliefs cherished by an administrator play a crucial role in the success or otherwise of technology integration in schools (Lumumba, et al., 2021; Schiller, 2003). Coupled with this, the technological competencies of school administrators serve as an essential element in school excellence because they anchor ICT integration in the school settings and operations, curriculum and pedagogy and create an enabling environment for ICT development competencies between and among teachers and students (Fullan, 2007; Moshood et al., 2020). Stuart and Remus (2009) bolstered that school principals who

perceive themselves as technology leaders have high ICT literacy levels and frequently integrate ICT in their administrative and instructional tasks.

Notwithstanding the abundance of research studies from 2010 on teachers' ICT competencies, usage, perception, and challenges (Adebi-Ceasar, 2012; Amenyedzi, et al., 2011; Sipila, 2011; Singh & Muniandi, 2012; Sey, 2013; Soh, 2020; Yalley, 2022). It seems to suggest that stakeholders in the educational sector misinterpret and misconstrue these studies on teachers' ICT competence as a measure of ICT competencies of all key players for curriculum implementation in schools. This assumption may be untrue because limited empirical research proves pre-tertiary administrators' ICT competence. To reiterate this point, Soh (2020) conducted a tracer study in Krachi East Municipal to assess the ICT competencies of primary school teachers. Soh adopted a descriptive survey sample size of sixty-two, and the data collection instrument were questionnaires, interviews and observations. The study results showed that most teachers have basic ICT knowledge and need improvement. Soh recommended that more training is required to enable teachers to integrate ICT in their teaching and other related task assigned to them to uplift and enhance the quality of education of the pre-tertiary education. Again, Ayebi-Arthur et al., (2009) conducted a study on the internet in senior high schools in the Cape Coast Metropolis of Ghana. The study's findings led to the recommendations that teachers should undergo a compulsory two-month ICT training to enhance their knowledge in the use of the internet. School administrators should also prepare budgets for ICT implementation in the schools.

The fundamental question is 'who is to

conduct the ICT competency-based need assessment of teachers? Who is to request such ICT competency training for teachers? Who is to prepare a requisition list of ICT resources needed in the school? Finally, who is responsible for using, storing, and maintaining these technological resources in the schools? The headmaster is the answer to these thought-provoking questions and serves as the first administrator and custodian of all school properties. ICT competency-driven assessment demands from school administrators, a pre-observation made by the researchers in some senior high schools (SHS) in the Birim Central Municipality, portrayed that SHS administrators resort to the manual and mechanical way of going about their administrative duties. However, ICT resources are available to them. It is interesting to note that staff records and management activities in some senior high schools in the studied municipality were still processed and kept in the traditional paper form. This archaic document processing and storage method has made administrative functions and office management extremely difficult and less efficient in the era of technological dispensation.

The observation made by the researchers confirms the research studies that indicate lack of ICT skills (Teo, 2009) and inadequate computer access (Dawson, 2008) as factors that hinders ICT integration in school without limitation to only teaching and learning but the school in its entirety (administration). The traditional method of administration appears to be far from what administrators need in this information age to bring about desirable administrative changes within the pre-tertiary education sector. Senior High Schools in the Birim Central Municipality of Ghana and their administrators were no exemptions; they faced challenges in changing their administrative operations to a more technological standard.

There are limited empirical studies on pre-tertiary administrators' competencies in ICT resource usage in the Birim Central Municipality.

As a result, the justification of this study is to establish the ICT competencies of SHS administrators to enable the Ministry of Education and the Ghana Education Service to identify key players who need to be technologically competent to empower and intensify the zeal of ICT utilization within senior high schools. It appears studies conducted present contradictory knowledge on the competencies of public senior high school administrators in their day-to-day usage of ICT resources in the performance of their duties (Adebi-Cesar, 2012; Amenyedzi, et al., 2011; Ayebe-Arthur, et al., 2009; Singh & Muniandi, 2012; Sey, 2013). Gauging from the above, this study sought to bring clarity and fill the empirical and knowledge gap created in existing literature. It is against this background, this study aimed to investigate SHS administrators' competencies in ICT resource usage, using Birim Central Municipality as a case of breakdown. The formulated research questions that guided the study were:

- i. How accessible are ICT resources to Senior High school administrators in the Birim Central Municipality?
- ii. How competent are Senior High School administrators in using ICT in the Birim Central Municipality?

### **Research Hypothesis**

H<sub>0</sub>: There is no statistically significant impact of administrators' ICT accessibility and competency on the use of ICT in the SHSs in the Birim Central Municipality.

H<sub>1</sub>: There is a statistically significant

impact of administrators' ICT accessibility and competency on the use of ICT in the SHSs in the Birim Central Municipality.

### **Significance of the Study**

The study provides information to the Ghana Education Service and the Ministry of Education on the need to intensify training and refresher courses on ICT for PSHS administrators. Through these avenues, PSHS administrators will gain technological-based competencies to utilize ICT facilities effectively to improve school administration. Again, awareness creation among school administrators on the need to integrate ICT resources in their administrative work is a significant variable. With this sensitization, PSHS school administrators will pursue ICT competence-based programmes from accredited organizations such as Fawoma IT Training Service (FITTS) to improve their IT skills and competencies to enhance their work efficiency and boost productivity. Furthermore, the study's findings serve as feedback to stakeholders to realign ICT related policies and initiatives to meet contemporary demands and use of ICT resources. Furthermore, change is difficult to attain within any human society. As a result, the study's findings will indicate the focal areas PSHS administrators lack the competence to enable stakeholders to skew attention, education, training and orientation to change the mindset of administrators.

### **Theoretical Review**

The technology acceptance model (TAM) explains and predicts respondents' information technology behaviour (Davis, 1989; Legris, et al., 2003). TAM provides a basis for tracing how external variables (such as accessibility, job relevance, skills, and awareness) influence attitude and intention to use technology. TAM posits two cognitive beliefs, thus

perceived usefulness and perceived ease of use. According to TAM, one's actual use of a technology system is influenced directly or indirectly by the user's behavioural intentions, attitude, perceived usefulness, and perceived ease of the system. TAM also proposes that external factors affect meaning and actual use through mediated effects on perceived effectiveness and ease of use (Chuttur, 2009). Perceived usefulness (PU) explains a prospective user's subjective probability that using a specific application system will increase their job performance within an organizational context. Some scales that indicate perceived usefulness include; work more quickly, job performance, increased productivity, and effectiveness making the job easier, useful. Perceived ease of use (PEOU) depicts how the prospective user expects the target system to be free of effort. Indicators of perceived ease of use are; easy to learn, clear and understandable, easy to become skillful, easy to use, controllable, and easy to remember. These two cognitive beliefs bring to bear the competency level of operators of technological resources. As one's competency increases, technical resources become helpful, and the tension and difficulty of using such technical resources become easy. When pre-tertiary administrators find the use of technological resources easy and less stressful, the probability of using these resources is high vice-versa. More importantly, if the perceived usefulness of the ICT resource is excellent, but there exists some difficulty in usage, pre-tertiary administrators will not continue to use such technological resources, which will become an ideal tower for office beautification. TAM model is used to explain technological acceptance by users due to its usefulness, ease of use, attitude towards use, intention to use and actual use (Pagani, 2004).

## **Materials and Methods**

The study adopted a descriptive survey

design as the nature, purpose, and cross-section survey for the time for data gathering. The researchers adopted the descriptive survey to ascertain and inquire into the status quo of the phenomenon of "pre-tertiary administrators' competencies in ICT resource usage in the Birim Central Municipality". Again, the descriptive survey describes the situation and events and answers 'what', 'when', 'where', and 'how' a particular phenomenon occurs (Creswell & Clark, 2011). From this ideology, the epistemological philosophy and the pragmatism paradigm served as the anchor of the study. The sequential explanatory mixed-method strategy used captured this study's best and most valuable data. For triangulation and complementary purposes, the quantitative and qualitative data were matched and tested for consistency and clarification of a method's findings from another way (Punch, 2009).

The study population encompassed all the Public Senior High School (PSHS) administrators in the five (5) PSHSs in the Birim Central Municipality. The figure obtained from the heads of the PSHS concerning the total number of administrators was seventy (70). This figure comprised school heads, assistant heads, school administrators, secretaries, accountants, department leaders, and ICT experts. The census sampling technique used all the 70 PSHS administrators in the study, but their inclusion depended on the data collection phase. For this reason, expert purposive sampling was used to select ten respondents (heads and IT experts) to be interviewed, while the 60 PSHS were required to complete the questionnaire.

The primary data collection for the study was a close-ended questionnaire and a semi-structured interview guide. Expert opinions from PhD Educational Administration in Higher Education and

PhD Curriculum and Instruction vetted the items in the questionnaire. They ascertained the instrument's content validity while pilot testing in two (2) PSHSs in the Birim South District was conducted to establish the reliability of the close-ended questionnaire. The researchers administered the questionnaires to 15 administrators in the two PSHSs. The calculated Cronbach's alpha coefficient of reliability of the questionnaire was 0.73, and 0.93 for research questions 1 and 2, respectively, while the overall alpha ( $\alpha$ ) value was 0.87. Cronbach's alpha coefficient value above 0.7 is considered highly reliable (Cohen, et al., 2005; De Vellis, 2003; Kline, 2005). Due to the inappropriateness in using validity and reliability to establish the rigor of a qualitative data, the researchers adopted credibility, transferability, dependability and conformability to establish the trustworthiness and authenticity of the findings of the study (Lincoln & Guba, 1985).

The researchers administered the questionnaires in person to the respondents. Respondents were guaranteed anonymity, concealment and confidentiality of information provided. The use of pseudonyms concealed the identity of the participants. The entire data collection exercise took five weeks. Data from completed questionnaires were analyzed using descriptive statistics (frequencies, percentages, cross-tabulations, mean, standard deviation and means of means) to examine research questions 1 and 2. Also, standard multiple regression was used to analyze the research hypothesis. Thematic analyzes was used in analyzing the qualitative data. Preliminary analyses were performed to ensure no violation of normality, linearity, multicollinearity, and

homoscedasticity assumptions.

## **Results and Discussions**

Respondents' demographic variables to PSHS administrators' ICT competence were gathered. These variables were: PSHS administrators' educational qualification, training in ICT, administrative roles, teaching responsibilities, and their application of ICT in teaching. Table 1 presents the cross-tabulation result used in analyzing the bio-data of the respondents.

Table 1 showed that 37(67.3%) of the respondents who had formal training in ICT were University graduates, with (12) respondent had Bachelor's degrees and (12) respondents were Master's holders. Teachers' and administrators' academic knowledge, proper professional training, and experience accounted for the accumulated ICT knowledge and skills to improve their work practice. Moreover, the result further depicted that school administrators who have additional teaching responsibilities apply ICT in teaching. Table 1 further indicated that (61.8%) of the respondents had teaching responsibilities and administrative roles. However, only 15(27.2%) applied ICT in teaching their various subjects. Respondents with teaching responsibility mainly comprise heads of Departments and Assistant school heads. Only 2(3.6%) out of 10(18.2%) of the respondents did not have any teaching responsibility. The heads of the school are of particular importance to using ICT in schools. Their participation in using ICT for various activities will inform their decisions toward fully integrating ICT into the school system.

**Table 1**

*Cross Tabulation on Bio-Data of Respondents*

*Cross-tabulation of Formal Training ICT against Highest Educational Level*

	Diploma	Degree	Masters	Others	Total (%)
Formal training in ICT	3	21	12	1	<b>37(67.3)</b>
NO formal training in ICT	4	11	1	2	<b>18(32.7)</b>
<b>Total</b>	<b>7</b>	<b>32</b>	<b>13</b>	<b>3</b>	<b>55(100.0)</b>

*Cross-tabulation of Administrative Role, Teaching Responsibility and Application of ICT in teaching*

Do you apply ICT in teaching?	Administrative role	Teaching Responsibility?		
		YES (%)	NO (%)	Total (%)
YES	Assist Head	2(3.6)	-	<b>2(3.6)</b>
	Head of Department	13(23.6)	-	<b>13 (23.6)</b>
	<b>Total (%)</b>	<b>15(27.2)</b>		<b>15 (27.2)</b>
NO	Assist Head	6(10.9)	2(3.6)	<b>8(14.5)</b>
	Administrator	-	5(9.1)	<b>5(9.1)</b>
	Secretary	-	5(9.1)	<b>5(9.1)</b>
	Accountant	-	8(14.5)	<b>8(14.5)</b>
	Head of Department	13(23.6)	1(1.8)	<b>14(25.5)</b>
	<b>Total (%)</b>	<b>19(34.5)</b>	<b>21(38.2)</b>	<b>40(72.7)</b>
Total	Assist Head	8(14.5)	2(3.6)	<b>10(18.2)</b>
	Administrator	-	5(9.1)	<b>5 (9.1)</b>
	Secretary	-	5(9.1)	<b>5(9.1)</b>
	Accountant	-	8(14.5)	<b>8(14.5)</b>
	Head of Department	26(47.3)	1(1.8)	<b>27(49.1)</b>
	<b>Total (%)</b>	<b>34(61.8)</b>	<b>21(38.2)</b>	<b>55(100)</b>

Source: (Field Data, 2021).

• **Research Question 1: How accessible are ICT resources to Senior High school administrators in the Birim Central Municipality?**

Access to ICT infrastructures and resources in secondary schools are the leading indicators of ICT integration in

school administration (Plomp et al., 2009). To create a clearer picture of the accessibility of ICT resources to PSHS administrators, the researcher considered the frequency with which administrators could use ICTs (see Table 2) and the location of ICTs for use (see Table 2)



**Table 2**

*Distribution of Respondents' Level of Accessibility to ICTs*

Level of Accessibility to	Mean	Std. Dev.	Mean Ranking
Computer	3.95	1.35	Highly Accessible
Internet facility	2.05	1.57	Moderately Accessible
Telephone	3.82	1.58	Accessible
Digital projector	1.91	1.32	Slightly Accessible
External storage device	3.78	1.33	Accessible
Printer	3.04	1.54	Accessible
Scanner	2.35	1.57	Moderately Accessible
Photocopier	3.18	1.58	Accessible
CCTV	1.09	.39	Not Accessible
Mean of means/Std. Dev	2.80	1.35	<b>Moderately Accessible</b>
<i>Mean rankings:</i>	<i>1.00-1.50 not accessible</i>		<i>1.51-2.00 slightly accessible;</i>
	<i>2.1-3.0 moderately accessible</i>		<i>3.10-4.00 accessible;</i>
	<i>4.01-5.00 highly accessible.</i>		

Source: (Field Data, 2021).

Table 2 reveals the result of the respondents concerning their views on the extent PSHS administrators have access to ICT resources in their schools. The (M=2.80; SD=1.35) indicated that respondents moderately had access to ICT in their schools. Specifically, the means scores of some technological resources such as computers (M=3.95; SD=1.35), telephone (M=3.82; SD=1.57), and external storage devices (M=3.78; SD=1.33) were highly accessible to respondents. Alternatively, the mean scores obtained for scanners (M=2.35; SD=1.5), and internet facilities (M=2.05; SD=1.5) were moderately accessible to PSHS administrators. Again, Closed Circuit Television [CCTV] (M=1.09; SD=.39) was not accessible to PSHS administrators. Data gathered from the interview conducted confirms respondents claim of computers been the highly accessible technological resources in the PSHS. Specifically, three out of the four ICT personnel indicated that *“their schools have some ICT equipment but were mainly computers”* (PSHS IT 2,3 & 4). Subsequently, all four ICT experts posited that,

*“Only hand full of administrators were equipped with a printer, scanner and photocopier in their offices”* (PSHS IT1, 2,3 & 4).

This information obtained supports the findings from the quantitative data. In the case of the telephone and external storage devices, six out of the 10 participants explained that *“PSHS administrators used their mobile phones and pen drives for administrative work”*. Also, two of the school heads in the interview stated that

*“Not all administrators are interested in directly using ICTs for their work, so it is only accessible to those who have the interest in using ICT”* (PSHS Head 1 & 4).

The researchers' visitation to the school heads' offices showed no computers on the desks of four out of five school heads. This implication is that although school heads implored ICT equipment, they did not use the computers themselves.

The Internet facility was slightly

accessible to respondents. A mean score (M=2.05, SD=1.57) indicated low internet accessibility for PSHS administrative work. Also, from the interview conducted, one school head confirmed in a statement that:

*“The internet is not accessible to school administrators; rather, it was accessible to students in the laboratory because we want to cut down cost” (PSHS Head 5).*

Sey (2013) made similar findings in his study on access to and use ICT infrastructure in public junior high schools in the Ga South Municipality of Ghana. Sey stated that “although some school administrators had access to computers, none had access to the internet. Also, a mean score (M=1.09; SD=.39) indicates that Closed Circuit Television [CCTV] is not accessible for administrators to use in the Senior High Schools. The mean of means scores (MM=2.80; SD=1.35) indicate that ICTs, in general, were moderately accessible to administrators in the schools.

However, the mean and standard deviation (SD=1.35) suggests that the responses given by the respondents were widely diverse. This implies that the administrators’ perceptions of the level of accessibility are neither high nor low. Therefore, school administrators were seen to have a moderate level of accessibility to ICTs for school work in the Birim Central Municipality.

• **Location of ICTs for administrative use in schools**

To further explain the variation in the responses on the levels of accessibility of the ICT equipment, administrators were asked to indicate the places where ICTs were available, and they could have access to for their work. The location of access, to an extent, explains the variation in the administrators’ level of accessibility to it. Table 3 presents results obtained for the ICT access locations and the number of administrators who get access in particular areas.

**Table 3**  
*Location of ICTs for Administrators’ use in the school*

ICTs	Location of ICTs					
	MO No. (%)	SCR No. (%)	ICT lab No. (%)	HO No. (%)	OTSch No. (%)	Total No. (%)
Computers	20 (36.4)	25(45.5)	2(3.6)	8(14.5)	-	55(100)
Printer/ scanner	17 (30.9)	-	20(36.5)	8(14.5)	6(10.9)	55(100)
Photocopier	10 (18.2)	-	12 (21.8)	25(45.5)	8(14.5)	55 (100)
Internet Access	7(12.7)	-	28 (50.9)	-	20(36.5)	55 (100)

Key: MO-My office; SCR-staff common room; OTSch-Outside the school  
ICT lab-ICT laboratory; HO-head’s office

Source: (Field Data, 2021).

It is shown in Table 3 that 20(36.4%) of administrators have access to computers in their offices. 25(45.5%) of them also have access to computers/laptops in the staff standard room [SCR]. It is worth knowing

that the standard staff room is the office space allocated to the head of departments [HODs]. This implies that 81.90% of the administrators have computers closer to them for administrative use. Therefore, this

situation emphasizes that computers are the most accessible ICT equipment in the schools, as shown in Table 3. However, interview responses from two school heads indicated that the computers/laptops used by the HODs in the SCR were not the school's properties. According to the ICT personnel interviewed, *"all ICT equipment that belonged to the school have catalogue numbers"* (PSHS IT 4). This explains why only 2(3.6%) HODs used the computers in the ICT laboratory for their work, as shown in Table 3. Again, almost half (45.5%) of the administrators got to do photocopy only in the school head's office. Three of the school heads interviewed indicated that,

*"The photocopy machine is kept close to their offices to check what the other administrators come to photocopy"* (PSHS Head, 1, 3 & 4).

Explanations from two interviews give the impression that when the photocopier is kept elsewhere without proper supervision, teachers and other administrators abuse its use for their work. Furthermore, three out of the four ICT experts interviewed indicated that,

*"Access to the internet was only located in the school ICT laboratory, which is mainly used by the students for ICT lessons, although administrators were permitted to use the internet in the laboratory"* (PSHS IT, 1,2, & 3)

The interviews also gave the impression that the schools had a secured wi-fi system. The researcher observed that the wi-fi was active in only one school. These passive wi-fi systems accounted for the low patronage of internet facilities at the ICT laboratories by PSHS administrators and teachers. According to the technology acceptance model (TAM), the external variable (access to ICT) feeds into the perception of ease of use and actual use.

Therefore, inaccessibility to the internet will translate into the non-use of the internet. This explains the minimal usage of the internet for school administrative activities in the public senior high schools in the Birim Central municipality. From the above analysis of the access locations, ICTs are available in the schools for administrative work; only half of the administrators have ready access to the ICT equipment available in the schools. The other half is to move to different locations to get access to particular ICTs, and this was seen by the administrators as not accessible to them. ICT resources were available in the PSHS; the locations of these technological resources prevented some administrators from immediate access and created some dissatisfaction with these resources. Therefore, there is moderate access to ICT resources for administrators in the senior high school in the Birim Central municipality. From TAM, external variables, in this case (ICT accessibility), determine the ease of use and usefulness, promoting the behaviour intention to use technology and subsequently the actual use. The moderate level of ICT accessibility will explain a reasonable average level of ICT use (Venkatesh & Davis, 2000).

• **Research Question 2: What is the competency level of administrators in the use of ICT in the Senior High Schools in the Birim Central Municipality?**

In the 21st century, ICT applications have been used in education, administration and management to support sustainable development. The school administrators indicated their competent level in the use of ICT resources for school administrative work. The items focused on their level of competency in the use of enlisted office application tools and internet applications.

The results obtained for research question 2 were analyzed and discussed using means, frequency and percentages. The results are presented in Table 4.

**Table 4**  
*Administrators' Competency in the use of ICT Applications*

Statement	I have never used this.	I need more training to learn the basis	My skills are sufficient for my needs	I am good enough to teach these skills to others	Mean
	No. (%)	No. (%)	No. (%)	No. (%)	
<b>Office application tools</b>					
Word processor	3 (5.5)	16(29.1)	20(36.4)	16 (29.1)	2.89
Spreadsheet/Database	12(21.8)	28(50.9)	14(25.5)	1(1.8)	2.12
Presentation software	10(18.2)	18(32.7)	20(36.4)	7(12.7)	2.45
Desktop publishing	21(38.2)	19(34.5)	13(23.6)	2(3.6)	1.93
<b>Internet Application Tools</b>					
Search internet (www)	8(14.5)	13(23.6)	24(43.6)	10(18.2)	2.65
e- mails	9(16.4)	13(23.6)	22(40.0)	11(20.0)	2.64
e-library	24(43.6)	13(23.6)	16(29.1)	2(3.6)	1.93
Cloud storage	24(43.6)	13(23.6)	16(29.1)	2(3.6)	1.93
Social media	9(16.4)	0	28(50.9)	18(32.7)	3.23
<b>Mean of means</b>					<b>2.42</b>
<i>Mean rankings: 1.00-1.50 not competent; 1.51-2.50 slightly competent; 2.51-3.50 competent; 3.51-4.00 highly competent.</i>					

Source: (Field Data, 2021).

Results from Table 4 indicate that majority 36(65.5%) of the respondents were competent in the use of 'word processor', in that 20(36.4%) said their skills were sufficient for their needs and 16(29.1%) responded: "I am good enough to teach these skills to others". A mean score (M= 2.89) shows that administrators are competent in using word processors. The mean (2.12) indicated that respondents were slightly competent in spreadsheet usage, however, 12(21%) of respondents indicated they have never used the database application before while 28(50%) of the respondents indicated they needed more training to learn how to use it

for administrative work. The implication is that 40(71%) of the administrators were not competent in the use of spreadsheet. Again, 10(18.2%) of the respondents indicated they have never used PowerPoint for presentations, 18(32.7%) indicated they needed more training to learn the basics of PowerPoint. Therefore, half the number of respondents were not competent in using PowerPoint for presentations. Nevertheless, the mean of (2.45) indicated that respondents were slightly competent in PowerPoint usage. These findings support Fellon's (2006) assertion that the main activities school principals

consistently use ICT for were letters and report writing and emailing, mainly done by a word processor. On the other hand, respondents were highly competent ( $M=2.65$ ) in the use of worldwide web and e-mails for administrative work respectively. However, the administrators were not competency ( $M=1.93$ ) in the use of e-library and cloud storage applications respectively. The mean of means scores ( $MM=2.42$ ) indicated that the respondents were slightly ICT resource usage. This finding confirms Parkard and Higgins (2004) position that administrators' low level of competence is associated with insufficient training, unavailability of ICT in the schools and little previous experience with ICT resources. The study's findings support Adebisi-Ceasar (2012), Amenyedzi et al., (2011), Sipila (2011), and Yalley (2022) claim that the technological competence of school administrators is low due to their lack of usage, perception and lack of assertiveness towards ICT resource usage. The prolonged barrier hindering the integration of technological resources in school activities can be premised on administrators' low level of ICT competence. Based on findings, stakeholders in the educational sector should not misinterpret and misconceive the several studies on teachers' ICT competence as a measure of ICT competencies of all key players of the school. Key stakeholders in the integration of ICT resources on school to enhance school efficiency and effectiveness need more training. These training will enable school administrators and teachers to integrate ICT in their teaching and other related task administrative duties to improve and enhance the quality of education at the pre-tertiary education level (Soh, 2020).

In the 21st century and the initiatives implemented due to the mounting of COVID-19, administrative effectiveness and efficiency reflect the self-efficacy of school administrators to respond swiftly and

confidently to the technological innovations proposed and implemented to ensure the smooth running of our education. Suppose technical resources will supplement the face-to-face contact hours and improve the school's administration, teaching, and learning. By so doing, perceived ease of use of the system becomes proportional to schools' administrators' confidence and competence in using the technology system. After being exposed to a scenario, the skills and competencies determine the ease of use of the technology system. Significantly, TAM provides a basis with which one traces how external variables influence attitude and the eventual use of ICT in schools. Therefore, a low competency level in ICT use will translate into a low level of actual use of ICT in school administration.

**Research Hypothesis:** There is no significant impact of administrators' ICT accessibility and competency on the use of ICT in the SHSs in the Birim Central Municipality.

This hypothesis examines whether administrators' ICT accessibility and ICT competency on ICT can significantly predict or influence respondents' ICT usage in their administrative work. As depicted in Table 5, the overall significance of the standard multiple regression model was  $F(2) = 7.650$ ;  $p=0.01$ . The regression model is significant given the level of significance to be  $p=0.001$ , which is less than  $p<0.05$ ; therefore, there is a statistically significant difference between the means of the dependent and explanatory variables. The value of the F-test disclosed that the model is satisfactory. The Durbin-Watson (DW) test statistic tests the null hypothesis that the residuals from an ordinary least-squares regression were not autocorrelated. Since the DW value was 1.654, there was no

autocorrelation among the model residual.

**Table 5**  
*Multiple Regression Analysis between (ICT Accessibility, ICT Competency) and ICT usage*

Variables	Unstandardized Coefficients		Standardized Coefficients		
	B	Std. Error	(β)	t-value	p-value
(Constant)	50.570	7.664		6.599	0.000
ICT accessibility	.703	.292	.339	2.409	0.000
ICT Competency	.374	.255	.206	1.465	0.002
Multiple R value	.477 <sup>a</sup>		F value	7.650	
R Square value	.227		P value	0.001 <sup>b</sup>	
Adjusted R Square	.198		Durbin-Watson	1.654	

a. Predictors: (Constant), ICT accessibility, ICT competency,  
b. Dependent Variable: ICT usage

Source: (Field Data, 2021).

\*Significant,  $p < 0.05$

As evident in Table 5, the multiple correlation coefficient is 0.477 measures the degree of relationship between the actual values (ICT accessibility, ICT competency) and the predicted value of ICT usage. The coefficient value of 0.481 indicates that the relationship between the independent variables (ICT accessibility, ICT competency) and dependent variable (ICT usage) was moderate and positive. The coefficient of determination (R-square) measured the goodness-of-fit of the estimated standard multiple regression in terms of the proportion of the variation in the dependent variables explained by the fitted ample regression equation. The study established ( $R^2 = 0.277$ ). Thus, the value of  $R^2$  of 0.277 explains the estimated standard multiple regression of 22.7% that uses ICT accessibility and ICT competency as the independent variables, indicating that about 22.7% of the variations in ICT usage and the  $R^2$  value is significant at 5 per cent level. The independent variables account for only 22.7% of factors that affect the dependent variable (ICT use).

The constant of the regression model was

50.570, which suggests that even when the independent variables were zero, ICT usage among respondents would still be 50.570. Again, the coefficient of ICT accessibility ( $B=0.703$ ), and ICT competency ( $B=0.374$ ), used represented a partial effect of the independent variables on ICT usage among respondents. The estimated positive sign implies that such impact is positive that ICT usage among respondents would increase by 0.703 and 0.374 for every unit increase in the independent variables, respectively. Moreover, considering the independent predictors, a p-value (0.000) indicates accessibility significantly predicted the use of ICTs in the school administration. This means that the two factors (Accessibility and Use of ICT) are positively correlated. The relationship means that the greater the accessibility to ICT facilities, the higher the use of ICT for school administration. The use of ICT in school administration relates significantly to the level of accessibility to school administrators. In conclusion, ICT accessibility and competency can statistically predict or influence the use of ICT by school administrators to facilitate administrative work. This finding goes to

support Makewa et al., (2013) findings that there was a significant difference between the perception of teachers and administrators on the importance of ICT use in students' administration, general administration and supervision of instruction.

## **Conclusion**

Based on the findings of this study, the study concluded that PSHS administrators have a positive view of ICT accessibility in the schools. Although computers are the most accessible ICT equipment in the school, the lack of internet accessibility affects administrative work. The location of the ICT facilities in the schools affects how PSHS administrators use ICT for school administration work. Significantly, Technology Acceptance Model (TAM) provides a basis that one could use to trace how external variable (accessibility) influence ICT users' behavioural intent and the eventual use of ICTs in schools. Therefore, a moderate level of access to ICTs denotes a relatively consequential intermediate level of actual use of ICT in school administration in Birim Central Municipality. Furthermore, school administrators in the Birim Central municipality have low competency in using office application tools (word, excel, PowerPoint and desktop publisher) and internet application tools. Despite administrators having sufficient skills for using a word processor, they needed more training to learn the basics of using spreadsheets, PowerPoint and desktop publishers. Relating PSHS administrators' accessibility to ICT resources and low competence to technology acceptance model (TAM), the confidence and competence in using the technology system translated into the perceived ease of use. The implication is that the skills an ICT user possess after being exposed to a system determine the ease of use of the technology

system. The low level of ICT competency is a significant factor influences and determines school administrators the rate of ICTs adoption in the performance of their administrative roles.

## **Recommendations for Career Professional Development (CPD) for PSHS Administrators**

There is a need for an ICT capacity building workshop for PSHS administrators and teachers to utilize ICT facilities effectively to improve school administration. Again, school administrators must pursue ICT competence-based programmes from accredited organizations such as Fawoma IT Training Service (FITTS) to improve their IT skills and competencies to meet global standards. Through this, administrators will enhance their administrative efficiency and boost productivity.

## **Recommendations for Policy Development (PD)**

Effective monitoring and evaluation of the ICT in Education Policy, related policies and initiatives to provide feedback to stakeholders and policymakers and upon deliberations and considerations serve as a feedforward to inform proper planning towards integrating ICT into education and its administration. Through this process, administrators in the Senior High Schools in the Birim Central Municipality will have a positive inclination toward the user's behavioural intentions, attitude, perceived usefulness, and ease of the system.

## **Limitation of the Study**

Administrative challenges such as busy schedules and Covid-19 protocols, 55 out of the 60 questionnaires were retrieved and

analyzed for this study. However, a return rate of 70%, according to Dillman (2000), is acceptable for a descriptive research study. Consequently, the return rate of the questionnaire for the study was 92%, thereby making the result obtained valid and sufficient for the study.

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