



Information and Communication Technology (ICT) Usage in Secondary Schools

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Article Info

Article History

Received:
10 November 2024

Accepted:
2 June 2025

Keywords

School heads' perceptions,
School administrators' practices,
Computer-assistive technologies,
ICT in education,
Secondary schools

Abstract

This study explores the heads of schools' experience of Information and Communication Technology (ICT) usage in secondary schools in Dar es Salaam, Tanzania. Specifically, the study examined the contribution of ICT and the factors affecting their use of ICT for administrative activities based on the experience of the heads of secondary schools. The study adopted a single case study design for qualitative research. Purposive sampling was used to obtain nine heads of secondary schools and data collection involved semi-structured interviews, observations, and documentary review methods. Thematic analysis was used to process the data and results appeared in the form of quotes and theme descriptions. The findings indicated that heads of schools are highly motivated to use ICT in school administration, as it supports financial tasks, enhances communication, facilitates record keeping, and processing students' examination results. The issues related to the digital divide, shortage of ICT facilities, technophobia, internet connectivity, inadequate funding, power supply, and technical support at school affected the heads of schools to use ICT in school administration. Findings recommended establishing regular ICT training, improving ICT facilities, ensuring sufficient funding and reliable internet services, and involving diverse stakeholders to address the situation. The study suggests the need for studies to examine the competence and readiness of heads of schools on the use of ICT for managing public funds. Additionally, investigating ICT use among institutional management leaders across levels of the educational system is recommendable

To cite this article

Nzilano, J. L. (2025). Information and communication technology usage in secondary schools. *International Journal of Academic Studies in Technology and Education (IJASTE)*, 2(2), 53-73. <https://doi.org/10.55549/ijaste.55>

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Introduction

The adoption of information and Communication Technology (ICT) in education is an important theme that has attracted debates from educators, researchers, and other education stakeholders in different places around the globe. Debates are pressed by the new era of technological innovation in the education sector through globalization. The influence of globalization demands in the education sector has made different educational institutions transform their operations of administrative and routine activities from analog to digital form. Different studies have been conducted in the education sector ranging from elementary to tertiary education examining different perspectives and transformations taken by educational authorities and stakeholders including teachers, parents, and students in the adoption of ICT in education to improve the quality of education (Mandari, 2018; Malekani, 2018; Mbalamula, 2014; Mwalongo, 2011; Nkata & Dida, 2020; Hamoud & Nzilano, 2024). The present study aimed to explore the perceptions of heads of secondary schools about using ICT in addressing administrative activities to meet the expectations of the school and educational stakeholders.

In the past two decades, the use of ICT has spread widely, resulting in significant reforms in the administration and management of schools (Juma et al., 2016; Omotayo & Chigbundu, 2017). Hence, these technologies are transforming teaching and learning and playing a crucial role in the administration and management of educational institutions (Irene, 2020; Ghavifekr et al., 2013; Malero et al., 2015).

Countries with developed economies such as the United States of America, Australia, Netherlands, and Britain, succeeded earlier in integrating ICT in school administration and management practices that have improved education quality (Mulinge, 2020; Amutha, 2020). For example, the United States of America started using computer technologies to enhance efficiency of school office operations including staff and students' records keeping since late 1970s (Forrester, 2019). Since Sweden began investment in ICT, motivation of heads of schools, and provision of training for school administrators, the country has made a significant impact on the education system (The Organisation for Economic Co-operation and Development - OECD, 2015). For instance, the heads of schools played the role of mobilizing and coordinating resources to accomplish the school and educational expectations (Mwambo, 2019; Olowonefa, 2022). With the use of ICT, the school administrators are intended to promote the efficiency and effectiveness of school managerial and administrative activities (Qureshi & Abro, 2016). Thus, the use of ICT is inevitable for the school heads to increase productivity and perform their duties effectively (Oluoch, 2016). ICT facilitates information processing, decision-making, storage and communication of information (Mwambo, 2019; Karanja, 2018). Although, developed countries succeeded to integrate technology in the management and administration of schools, still ICT has not been effectively utilized to achieve the core functions of school administration. In the USA for instance, the adoption of different database by the school administrators to support administrative functions

made it difficult for them to manage the data storage systems (Forrester, 2019). Same in Germany, the school principals use ICT frequently for communication with top authorities, still, ICT appeared to be not effective to create presentations and communicate academic for administrative purposes (Tulowitzki et al., 2022). Likewise, Malaysian school principals demonstrated limited extent of ICT usage to address issues of school administration due to insufficient knowledge and skills in ICT and as an alternative turned to analog systems. (Ghavifekr et al., 2013; Qureshi & Abro, 2016).

In developing countries, studies revealed that the use of ICT for secondary school administration is limited as Midoro (2013) reports found that in Africa the majority of school administrators including heads of schools demonstrated limited knowledge and skills of ICT use. For example, in Nigeria, school administrators in public secondary schools used manual systems for students' registration and record keeping because of limited ICT facilities such as computers, internet connectivity, scanners, and electricity supply which affected the school performance of administrative activities (Abraham & Bariyaa, 2020; Abdullahi et al., 2020; Kalu et al., 2017).

At the beginning of the 21st century in East Africa, ICT integration in teaching and learning has increased together with the use of ICT for school administration and management activities (Irene, 2020). For instance, the use of ICT is considered in the Kenyan Development Vision 2030 (David et al., 2019) and the National ICT policy of 2006 to expand ICT usage at all levels of the education sector (Njeru, 2020). Moreover, realizing the roles of ICT in educational management and administration. The Kenyan government established the National Education Management Information System (NEMIS) to deal with administrative activities in the country's system of education (Karanja, 2018). Although the government has made this efforts, there are many school administrators who perform their roles and duties using the analog systems. (Irene, 2020). For instance, Mulinge (2020) found that most heads of schools in Kenyan public secondary schools lack adequate ICT skills to use NEMIS in managing school finances, instead, they used ICT to monitor the attendance of students in classrooms, making the school timetable, and supervision of teachers at school (Njeru, 2020). Similarly, the use of ICT in education in Tanzania started in the late 1960s and early 1970s, when the Ministry of Education collaborated with the Radio Tanzania Corporation to deliver educational programmes primary and secondary education levels (Hare, 2007). Tanzania since then has made several initiatives and reforms to integrate ICT in the education system and responding to the national development goals and global agenda of the sustainable development goals (Hare, 2007). To achieve this mission, in 1990s Tanzania among 53 countries in Africa collaborated with several international agencies to invest and promote access to ICT in the education systems. The situation made Tanzania to initiate the national ICT policy in 2003 and revised it in 2016 to ensure that the country achieve the national development goals through the use of ICT (United Republic of Tanzania-URT, 2016). In light of this, the current national policy for the provision of education and training supports the integration of ICT in education to achieve academic, managerial and administrative tasks (URT, 2014). This

situation has motivated several researchers to explore the experience and practices of school administrators in using ICT to implement administrative activities in educational institutions including secondary schools.

Despite the government initiatives in Tanzania to ensure the use of ICT in facilitating school administrative functions, the literature has demonstrated that there is limited use of ICT in secondary schools for administration (Mandari, 2018; Malekani, 2018; Mbalamula, 2014; Mwalongo, 2011; Nkata & Dida, 2020). The literature revealed that ICT usage is limited to some administrative activities including writing of letters, registering students, and preparing day-to-day school timetable (Mwalongo, 2011). Moreover, heads of schools were ineffective in using ICT for implementing the EMIS such digital technology is underutilized in school management and administration and many public secondary schools had inadequate ICT infrastructure (Mbalamula, 2014). Despite these studies, many heads of these schools rely on manual systems to administer several administrative tasks (Mandari, 2018; Mbalamula, 2014; Nkata & Dida, 2020). Arguably, the over-dependence on manual system among school administrators is more likely to affect their efficiency and effectiveness in the performance of administrative tasks and the potential quality of education.

Purpose of the Study and Research Questions

The purpose of the study was to explore the perceptions and experiences of heads of schools in using ICT to achieve the administrative functions of government secondary schools in Tanzania, especially Dar es Salaam. The study is guided by two research questions that include:

1. What are the roles of ICT in school administration as perceived by heads of schools?
2. What are the perceived factors affecting the heads of schools in using ICT for administrative activities?

Methodology

Research Approach and Design

This study employed a qualitative research approach to explore the heads of schools' perceptions regarding the use of ICT in the administration of government secondary schools in Dar es Salaam. The researcher used the approach to obtain comprehensive knowledge about the perception of the phenomena and the rationale of those perceptions in the context (Gay et al., 2012). This study employed a case study design, emphasizing on the views, opinions, and feelings of school heads about ICT usage in the administration of government secondary schools in Dar es Salaam. A case study design provides the chance to explore or gather rich and holistic data concerning the phenomena (Ary et al., 2010). The case for this study is the perceptions of heads of schools based on their narratives and practices and experience in performing their roles as heads of schools in

government secondary schools. The unit of analysis captured narratives and responses of the heads of schools from their secondary school settings. The selection of the case study design motivated the researcher to gain rich information concerning the perception of the secondary schools' administrators concerning ICT usage in school administration. Additionally, the case study design facilitated information collection from different sources and the triangulation of methods.

Sample and Sampling Procedures

The purposive sampling procedure facilitated the selection of heads of schools based on schools equipped with ICT facilities and ICT integration history in administrative practices. This technique was chosen because works well with the design and is common to the design (Gay et al., 2012). In this case, nine out of 51 heads of schools selected from 'A' to 'I' Tanzanian government secondary schools within Dar es Salaam. The size of the sample depends on the information saturation as collected from nine heads of schools. According to (Ary et al., 2010), the data are considered sufficient when there is no more additional information to gather from the nine participants. Dar es Salaam was considered due to its abundance of government secondary schools with a long history of integrating ICT into pedagogical and administrative tasks. The heads of schools in this area appeared to use ICT in their administrative tasks compared to other secondary schools and had enough information to address the study problems.

Data Collection Methods

The study adopted the semi-structured, documentary and observation methods of data collection.

Semi-Structured Interview Method

The semi-structured interviews were used to gather perceptions from participants. The method allowed free expression of participants' perceptions about using ICT in secondary school administration. Information collected about the feelings and views of heads of schools concerning the daily practice of ICT usage at work. The interview with each head of school involved 30 to 45 minutes and the duration was sufficient to obtain enough information. Hence, the researcher ensured that each participant has provided consent to be voice-recorded, and interviewed before the interview session and for the provided information.

Documentary Review

Documentary reviews involved school plans, financial records, and school minutes as per the objectives of the study and information to supplement the interviews. The schools' plan and minutes helped to determine the extent to which ICT has been a priority in the school context. In addition, the school agenda, plans, and minutes

were examined to determine the extent to which ICT supported the heads of schools to attend on-the-job training or workshops, perform administrative tasks, and improve the quality of secondary education.

Observation Method

The observation checklists were used to assess the actual ICT facilities available in offices and classrooms. The researcher observed and recorded the availability or absence of ICT tools in the administration of school activities. The observed items included school printers, desktop computers, scanners, internet bandwidth, television receivers, digital cameras, projectors, fax machines, and photocopiers. ICT tools were considered present if the school's office had sufficient facilities, and they were considered absent, they were insufficient. The observation method supplemented more information not obtained by either interviews or documentary reviews.

Data Analysis Strategies

The researcher employed thematic data analysis to process the documentary transcripts interviews, and observation based on Braun and Clarke's (2006) model that provided systematic qualitative data processing. The thematic analysis process involved six steps including data familiarization, coding, and labeling data, creating themes, comparing datasets and themes, defining and naming the themes, organizing and arranging themes for a report write-up. The outcome of thematic analysis is presented in the form of narratives and quotations for interpretation.

Findings and Discussions

Perception of Heads of Schools about the Roles of ICT in School Administration

Considering the roles of ICT in the administration of selected secondary schools in Dar es Salaam, the findings are presented and discussed in line with key school administrative functions.

Managing Financial Activities

The heads of schools as key informants (KI) in the present study noted that the available ICT facility promoted budgeting, processing, and record-keeping of school finances. As one of the respondents indicated that 'using computer application software such as Excel program. I can record and process financial activities, prepare statements, and shared easily with the educational authority. At the moment, we are not preparing manually the financial data' (KI, School F, August 2023).

Another respondent supported: ‘The ICT use has assisted me to ensure that the financial resources, the transactions, the recorded database, and transparency creation of schools, particularly to audit financial reports of schools’ (KI, School E, August 2023). These findings implied that the heads of schools perceived positive use of ICT in facilitating financial activities at school. They further perceived that using computer-assistive technologies including the Excel program supported the management of financial tasks. They acknowledged that without ICT facilities such as computers, their work of monitoring, auditing, and preparing school financial budgets and reports would be difficult. Findings corroborated previous studies, which indicated that ICT is useful in achieving administrative functions (Mwambo, 2019). These studies reflected the use of ICT for preparing balance sheets, payment slips, and financial audit reports (Mwalongo, 2011), monitoring budgets, controlling financial transactions and expenditure records, and maintaining financial records through automatic recording and analysis of school finances using spreadsheets (Mwambo, 2019).

Facilitating Communication

The use of technological tools including mobile phones to access social media platforms like e-mail, Facebook, phone calls, text messaging, and WhatsApp appeared to be common among heads of schools to communicate issues affecting the school to different stakeholders. As one of the respondents argued:

I admit the use of ICT simplifies communication in the administrative process. Using digital tools including WhatsApp, and e-mails make information communication easy for my staff at school, even during my absence. For example, I created WhatsApp groups to help parents and teachers to communicate their information related to the development of the school (KI, School B, October 2023).

Additionally, ICT played the role of communicating to the public about the status and opportunities available at school to attract more customers. As one of the respondents indicated, ‘the administrative activities in schools plays several roles to deliver school services effectively. For example, the Website and the Facebook of the school have been assisting communication and promoting the image of school’ (KI, School E, October 2023).

These findings resonated with previous studies conducted in Germany, Nigeria, and Uganda that ICT was frequently used to communicate information to educational authorities within and outside the country (Tulowitzki et al., 2022), to teachers, parents, and educational partners to improve administrative performance (Omotayo & Chibundu, 2017), to managerial level in higher educational administration (Juma et al., 2016). Supporting these study’s findings, Karanja (2018) noted that ICT development in schools facilitates communication of information among various stakeholders via email, video conferencing, and social media, which improves heads of school’s administrative functions.

Keeping Records

Information and communication technology have contributed to the storage of administrative and academic records at school. The findings indicated that heads of schools perceived that ICT advances in schools helped to address their problems of data storage. One of the respondents explained:

ICT tools assisted us in the storage of different records in our school. We acquired the school database some time ago, now we use computers to store students' records. We simply click the student's name and registration number to access their records within a few seconds (KI, School D, October 2023).

Another respondent added: 'In the previous, the school managed manually huge amount of records that were at risk of losing. Undoubtedly, ICT advancements made things possible and we can store, retrieve, and transfer information cheaply or without any cost' (KI, School I, October 2023). As per these findings, the heads of schools revealed that ICT facilities have played a significant role in facilitating the storage of records related to administrative and academic practices in secondary schools. The findings corroborate studies by Ghavifekr et al. (2013) who emphasized the multifaceted role of ICT use in various administrative tasks, ranging from data storage to decision-making, and by Abdullahi et al. (2020) who discovered the effective use of ICT to address challenges related to mismanagement of records easy access to comprehensive school records. In addition, the findings reflected Olowonefa's (2022) studies which found that ICT supported school principals to securely store and retrieve school data.

Processing of Students' Results

The study's findings indicated that the heads of schools acknowledged the value of using computer-assistive technologies such as MS Excel in facilitating the processing of student's examination reports. As one of the respondents emphasized:

The school has just obtained computer software to help us process students' results. The software helps us to generate results of students from the raw score automatically and share the students' results with parents easily via smartphones. Before the software, we printed results on paper and sent them to parents through their children. Today, parents can access the results through their smartphones reducing the possibility of parents queuing in school offices (KI, School D, October 2023).

Similarly, another respondent argued that 'ICT has simplified preparation of examination reports. We can compute the marks and grades of the student by using Microsoft Excel software. Not like before, we wasted a

lot of time to prepare reports of students manually' (KI, School A, October 2023). These findings concur with studies by Juma et al. (2016) who noted how ICT improved the performance of school administration in processing students' examination results in higher education in Uganda, and by Olowonefa (2022) who revealed the role of ICT in improving data collection and facilitating information retrieval. These findings reflected what Mwalongo (2011) discovered that teachers and school administrators used ICT for academic and administrative activities including preparing examination reports of students. Thus, the findings implied that the manual activities of teachers and administrators have been automated to speed and ease their teaching and administrative performance in secondary schools.

Factors Affecting ICT Usage for Administrative Activities

The findings revealed factors that heads of schools perceived to limit their use of ICT effectively in addressing school administrative activities.

Inadequate ICT Knowledge and Skills

The findings revealed that the school administrators lacked enough knowledge and skills in ICT, and this situation affected them to use ICT effectively in performing administrative roles at school. The findings generated from the interviews demonstrated limited practical knowledge and skills among heads of schools due to a shortage of continuous training on ICT literacy. The narratives from interviews indicated that the government had limited training programmes to equip school administrators or heads of schools with ICT competencies. For example, one of the respondents narrated:

I was involved in the training session organized by the government. The training in ICT was not enough to make us competent as we remained novice users of computers. In the recent training workshop on ICT integration in the system of education for the school administrators, the trainers disengaged the feelings of trainees by emphasizing the system operations rather than providing comprehensive ICT training to address administrative tasks (KI, School A, October 2023).

Similar sentiments were echoed by another respondent:

The truth is that the training on ICT was not satisfactory because it did not address expectations. The heads of schools are expected to master several computer applications. Additionally, the training was given two days for the heads of schools to master the ICT skills such as PowerPoint presentation, Ms. Word, and Ms. Excel (KI, School E, October 2023).

Furthermore, another respondent explained: that the government expects to use ICT for the administration of school activities at low training costs. I used my secretary who is competent in computer application to perform other administrative tasks (KI, School G, October 2023). The quotes above reveal the view that the ICT training was inadequate to equip the heads of schools with the necessary computer application skills. For instance, the heads of schools needed more time to learn particularly the spreadsheet and word processor. These findings corroborated with Abdulahi et al. (2020) studies that the provision of enough training time to school principals enhances the acquisition of more relevant ICT skills and knowledge. Furthermore, heads of schools perceived that the government implemented ICT training that focused on theories rather than the practice of computer application (Hamoud & Nzilano, 2024). Equally, the findings reflected Mwalongo's (2011) observation that the heads of schools demonstrated limited knowledge and skills in using Microsoft Office, which is common to the management and administration of educational activities.

Further, these findings revealed that heads of schools were dissatisfied with the in-service ICT training programmes provided by the school administration, which appeared to be ineffective and less practical. Moreover, the findings revealed that school administrators who faced the challenges of using computers to deal with administrative tasks, they delegated those tasks to their secretaries who were computer literate. Arguably, the heads of schools were expected to be conversant with computers because nowadays several administrative tasks such as sharing reports and minutes, and official letters to other authorities or fellow staff members require electronic systems. This view is acknowledged by Afshari, et al (2012) that effective performance of administrative activities requires heads of schools with knowledge and skills of ICT. These findings align with studies by Abraham and Bariyaa (2020) and Imasuen and Abinuomo (2022) noted that principals of Nigerian secondary schools in remote and town areas showed limited ICT skills, especially using computers to monitor students' results, school resources, and inventories. Moreover, the findings of this study concur with studies by Irene (2020) in Uganda who noted that lack of ICT knowledge and skills limited the effective use of ICT in secondary school administration. Likewise, the findings reflected those of Malekani (2018) and Mwangasi (2019) who revealed that heads of schools demonstrated limited usage of ICT in managerial and administrative tasks in Tanzania. Same, Mandari (2018) noted that heads of schools in Tanzania lacked ICT training opportunities, which made it difficult for them to manage school administrative activities. This situation implied that the heads of schools in Tanzanian secondary schools are argued to other avenues such as computer-based resources to learn about ICT instead of relying on the government alone for the training

Shortage of ICT Facilities

The study's findings revealed that heads of schools were not effective in the coordination of administrative activities because of limited ICT facilities. Additionally, the heads of schools showed that technologies such as

scanners, fax machines, laptops, projectors, photocopies, and printers were inadequate in secondary schools, which affected their performance of administrative activities. The heads of schools identified this as one of the factors that affect their effective use of ICT in achieving administrative activities. For instance, one of the respondents said:

My office, as you can see has one computer. I use it to create my documents. We received this computer as an aid from the internet services company. Given the various administrative tasks, the computer aid is not enough because we need the Microsoft Office package to complete the computer applications (KI, School C, October 2023).

Similarly, another respondent stated:

This school has some ICT facilities such as two printers and two computers acquired from non-governmental organizations. However, they aren't enough to help us address effectively the school administrative tasks. As big as a school like this, we need adequate ICT tools to support the administrators and teachers to accomplish their academic activities (KI, School D, October 2023).

These narratives reveal that secondary schools have a shortage of ICT facilities such as printers, photocopiers, databases, and desktop computers for heads of schools to perform their administrative roles effectively. One of the respondents in school **D** supported that the present printers and computers are not enough to meet the requirements of the academic and administrative staff at this school. Similarly, the heads of schools revealed that the present ICT facilities such as photocopiers, printers, internet services, and desktop computers in secondary schools were considered inadequate and outdated. The study noted that although some secondary schools possessed projectors, digital cameras, school websites and television, the majority of administrative and academic staff could not access the resources because some of these ICT tools were either outdated or malfunctioning. Additionally, the reviews of financial budgets and plans of some selected secondary schools **A**, **C**, **D**, and **H** showed that these schools hardly had any agenda focusing on the significance of integrating ICT in administrative and academic activities. The budget and school plans lacked priorities for ICT facilities and services, a situation that limited the access of heads of schools to ICT tools and using them to achieve their administrative roles. Therefore, the presence of up-to-date ICT facilities in secondary schools would increase the possibility of heads of schools enjoying the merits of ICT usage for administrative processes and contribute to the provision of quality education. These findings resonate with studies by by Karanja (2018) and Omwenga and Meremo (2019) that although Kenyan secondary schools possessed desktop computers, they experienced a shortage of ICT facilities to support administrative work. Moreover, the findings reflected the Nigerian studies (Abdullahi et al., 2020; Abraham & Bariyaa, 2020) that secondary schools had limited ICT tools

including scanners, projectors, databases, and computers, which affected the school principals both in urban and rural settings to integrate ICT effectively in administrative tasks. While studies by Mwambo (2019) in Cameroon noted that the school principals used ICT tools to achieve administrative tasks, Albugami and Ahmed (2015) in Pakistan and Quareshi and Abro (2016) in Saudi Arabia discovered that school principals lacked the necessary ICT competencies to achieve the same task effectively. Thus, the training of ICT competencies among school administrators in government secondary schools is mandatory.

Unpredictable Internet Services

Findings, as perceived by heads of schools indicated that internet problems affected their implementation of the school administrative roles. Six school administrators from nine selected secondary schools reported unpredictable internet service as one of the major factors that hinder ICT usage for school administration. One of the interviewed respondents said:

In the previous, there was a free connection to internet service from the service provider, which helped me and the teachers to accomplish our tasks smoothly. At the moment the whole school experiencing poor access to the internet service because the provider has stopped it (KI, school C, April 2023).

Based on the quotation, the secondary school administrators seemed to be struggling with ICT usage in completing their administrative roles due to unfavorable internet operation costs. Additionally, the internet service provided was reduced to the ability of the school to bear the charges. In this situation, the researcher observed that two out of nine selected secondary schools, **E** and **F** had active Wi-Fi routers, and other schools **A**, **C**, and **D**, had in-active routers, which were acquired from the service provider. As one of the respondents justified: 'My school has computers and other devices such as photocopiers, scanners and printers. However, there are no internet services that limit us to use ICT effectively' (KI, School I, April 2023). Another respondent added:

The school has purchased one printer and two desktop computers and we are using them to perform several administrative activities. However, the school lacks access to free internet making it difficult to connect the Wi-Fi of our smartphones to the school's desktop computers (KI, School G, October 2023).

The quotes demonstrate that the lack of reliable internet services posed a significant limitation to the effective use of ICT among heads of schools in performing their administrative work. A majority of heads of schools in government secondary schools report a lack of internet connectivity which sometimes forces them to rely on personal smartphones and mobile hotspots to link their computers to the internet and sustain online

administrative activities. These findings are reflected by studies supporting that who supports that ICT services are meaningless if they lack internet connection to facilitate sharing of information sharing (Tigere, 2020). Besides, the findings corroborate with Abdullahi et al. (2020) views that poor connection to internet services affects administrators, teachers, and students to use ICT to achieve their roles. Additionally, the findings are in line with Tanzanian studies that weak or unpredictable internet and electricity are crucial factors that hinder the effective integration of ICT tools in the administration of secondary school educational programs (Francis, 2017; Hamoud & Nzilano, 2024; Malekani, 2018). Internet connectivity is a critical factor to observe for effective ICT usage in Secondary Schools.

Technophobia

Heads of schools revealed that technophobia is one of the significant reasons affecting the ICT usage for administrative activities. For instance, in schools **A** and **H**, heads of schools perceived computer applications are complex and they felt not easy to adapt them for administrative work. One of the respondents asserted:

I am not at ease when asked to perform my work using computers. As of now, I do not have a computer in the office. It is something that I am not used to. At my age, I do not have the basic skills of using computers. Although, during my university and teacher training college computer courses were mandatory and taught more theories because there were few computers in the laboratory. I feel comfortable doing my work manually (KI, School H, October 2023).

Furthermore, another added:

Always I feel nervous to use computers because I fear to make mistakes. It happened once by mistake I deleted a document and I did not even know which button was pressed. we lack the passion and knowledge of computers, which affects us to use technology successfully. My second mistress and the secretary support some tasks that need to be administered by computer applications (KI, School A, October 2023).

The inference from the quotations is that fear of technology affects the application of ICT tools for school administrative work. This situation is observed as an ICT application complexity resulting from limited ICT training among heads of schools to build their confidence of using technology. Therefore, technophobia appeared to challenge the competence of heads of schools to apply ICT in performing their administrative task. Nigerian studies by Abdullahi et al. (2020) and Unachukwu and Nwankwo (2012) noted that the school principals demonstrated paucity of computer knowledge and skills, and anxiety when it comes to using ICT for administrative activities, believing that it is complex and relevant for a new generation. Moreover,

Mwalongo's (2011) findings indicated that Tanzanian school administrators and teachers perceived that ICT tools are sacred objects and are not suitable for handling administrative tasks. The situation reflects Davis's (1989) assertion that technology acceptance relies on the perceived easiness and usefulness of that technology to influence the behavioural intentions and attitudes of users. Thus, heads of schools' fear of using ICT for administrative functions are more likely to be affected by the perception that ICT is complex, sacred, and not suitable for their generation.

Shortage of Funds

The shortage of funds affected the capacity of the secondary schools to procure ICT resources such as computers, printers, and scanners. However, findings from the reviewed documents such as school budgets and strategic plans showed that the school administration has less priority for ICT integration in secondary schools. As one of the respondents noted:

This school relies on the money collected from students as tuition fees. The funds cannot afford us to procure ICT facilities. You know, nowadays ICT facilities require a significant amount of money as the school has a limited budget to afford expensive ICT facilities (KI, School D, October 2023).

The inference from this quote is that secondary schools receive government funds and collect some money from students as tuition fees, which support processes of academic and administrative activities including purchases of ICT equipment. Similarly, the evidence from the analysis of documents revealed that some schools **A, C, D, and H**, lacked a budget to establish and keep up ICT facilities. The implication is that ICT in schools is of less priority making it difficult for the heads of schools to integrate ICT in the performance of administrative tasks. The findings agree with studies that public secondary schools in Tanzania faced challenges to procure and maintain ICT facilities (Malekani, 2018) due to over-dependence on unrealistic government budgets to support the acquisition of ICT devices and services (Ndume et al., 2021). Unlike findings in Kenya by Oluoch (2016) who revealed the mobilization of school funds from different sources including influential individuals, politicians, and private organizations to purchase ICT resources were actively arranged by school principals. Thus, this situation suggests that the development of critical thinking competencies among school administrators and other educational authorities is of great importance in secondary schools.

Unpredictable Supply of Electricity

The unpredictable power supply was perceived by the heads of schools as an important factor that influenced their initiatives towards ICT usage in secondary school administration. In this case, three heads of schools

noted that unreliable electricity supply disappoints them in the use of ICT equipment at school. One of the respondents elucidated:

We are facing the problem of recurring power outages which influence the performance of school activities. Occasions of frequent power outages are common in our school. The awkward thing is that many secondary schools of the government lack alternative sources of energy to support the implementation of administrative tasks (KI, School H, October 2023).

Similarly, another respondent maintained:

The power outages have adversely affected the capacity of heads of schools to perform administrative work using ICT. For example, we submit urgent electronic reports when our authority such as the office of the Municipal Education Officer needs them. We are forced to submit the same reports manually due to frequent electricity failures. As a result, the problem delays the preparation of the reports and submission to the respective authorities (KI, School I, October 2023).

These findings reflect that the recurring electricity failure affects ICT usage in the administration of secondary schools. This situation appeared to disappoint heads of schools to use ICT, as they delayed the performance of administrative tasks and urgent communication of reports to relevant educational authorities.

The existing findings corroborate with Abdullahi et al. (2020) view that Nigerian secondary schools experienced frequent power outages which affected ICT usage for school management and storage of records. Similarly, studies by Tigere (2020) from Kwazule-Natal in South Africa reflected that frequent electricity interruptions hindered ICT integration in rural and urban secondary schools. Additionally, Irene's (2020) study concurs with the study findings by emphasizing the impact of power outages for effective ICT use for secondary school the administration in Mitooma area of Uganda. The situation of unreliable supply of electricity seems to be common in developing countries and suggests that school administrators should choose to use alternative power sources in secondary schools.

Shortage of Technical Support

The findings revealed that five heads of schools had the view shortage of technical support affects their use of ICT to coordinate administrative tasks. As one of the respondents reported:

In this school, we use computers to achieve the tasks of school. However, the computers are not in good condition as they need repairs and maintenance in software and hardware. We received a donation of old computers that are not compatible with the new computer applications (KI, School B, October 2023).

Another respondent explained:

Our school does not have reliable ICT infrastructure. We use printers and computers that are in poor condition. The computers lack repair and maintenance, and we have not had an IT expert for a long time now to service and repair our ICT facilities (KI, School I, October 2023).

The findings in these quotes reveal that secondary schools for a long period do not have technical experts or information technology (IT) responsible for the maintenance of ICT facilities. Since IT experts are scarce or not available in schools, the secondary school condition seems to be not favourable for the heads of schools to effectively use ICT for administrative work. The researcher's observation of secondary schools discovered a variety of ICT resources including desktop computers, photocopiers, and printers that needed serious maintenance and repairs. For example, secondary school **B**, **D**, and **I** had an old printer and a desktop computer to support the performance of school administrative work. The situation might have compelled some heads of schools to resort to manual systems to do their administrative roles. Moreover, the shortage of information technology experts in secondary schools of the government was perceived by heads of schools as another important factor that limits the effective utilization of ICT for school administrative work. Additionally, the absence of IT experts in many secondary schools caused high storage of outdated ICT equipment. The present findings concur with studies in Kenya by Chepkonga (2015) and Uganda by Irene (2020) who noted the shortage of ICT technical assistance affected the school principals to manage public secondary schools using ICT. Therefore, technical assistance is important for the effective operation of ICT facilities in secondary school administration.

Conclusion and Recommendations

The findings offer the conclusion that limited ICT literacy among heads of schools, shortage of ICT and internet facilities, fear of using technology among heads of schools and unpredictable supply of electricity were the crucial factors that affected the heads of schools to use ICT for administrative and academic functions. Despite the factors affecting heads of schools in using ICT tools, heads of schools perceived that ICT has improved various school administrative activities such as managing finances, communication, and academic and office records.

The study's findings have implications for the improvement of policy practices and new research opportunities. The findings call for the need of educational stakeholders' authorities, and school administrators to improve the use of ICT for school administration activities by ensuring the following: (1) supply of ICT facilities, (2) availability of information technology experts, (3) supply of reliable electricity and internet services, and (4) training heads of schools on ICT basic literacy. Further, the findings have provided the implications that since the present study was confined to the qualitative findings, a wide scope of the study that might embrace both qualitative and quantitative methods is needed to investigate the perceptions and practices of heads of schools about their ICT usage in secondary schools and other similar contexts. In addition, studies are needed to explore the heads of schools' competence and preparedness to use ICT for administrative functions including finances, records keeping, communication, publishing administrative materials, and engaging in online meetings.

Acknowledgments or Notes

This research was funded by the researcher and appreciates the courage and tolerance of his daughters and spouse for allowing him the time to prepare this manuscript. The researcher acknowledges the contributions of respondents who volunteered to participate in this research and the assistance of Mr. Gibonce Barnabas who spent time collecting data in the field.

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