Chapter 34
The Role of ICTs in Selected Secondary Schools in Fako Division, Cameroon

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34.1 Introduction

Information and communication technologies (ICTs) are essential in our world today, permeating every sector of the economy, including education (Asongu et al. 2021). In the education sector, many educators believe that technology is essential for school restructuring and curriculum reform as it is needed to improve the educational system (Oyediran-Tidings et al. 2021; Ergado et al. 2021). The quality of accomplishment depends on the school administration's leadership, cooperation, and competencies, as reported by Latchem et al. (2001), who suggested that, in the quest for increased access to education, considerable emphasis should be placed on potentiating ICTs.

School leaders motivate teaching and non-teaching staff to become interested and learn ICTs to perform their various roles for effective school success. In the technological age, the school administrator's functions have become increasingly challenging. They need computer literacy skills to locate, access, evaluate, and analyze information in the workforce (Carroll and Broadhead 1995). This challenge has become even more profound with the current and sudden need to move to online teaching and learning during the COVID-19 pandemic.

The lack of ICT skills, poor attitude toward ICT use, and limited and outdated computers present problems for ICT use in schools with limited resources. Even though ICTs effectively facilitate school administration, the lack of sound and reliable technological infrastructure in some countries in Sub-Saharan Africa, such as

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Cameroon, hinders these efforts (Nganji and Nggada 2014). Also, the lack of support from school administration (Ngajie and Ngo 2016) and a lack of vision (Mbangwana 2008) have hindered the quality and success of ICT implementation, which is vital for school success. Against this backdrop, this study sought to investigate the use of ICTs to improve the quality of secondary school administration.

This study aimed to investigate how information and communication technologies are used to improve the quality of secondary school administration in the Fako Division of Cameroon. To achieve the primary goal of this study, we developed the following specific objectives to guide the study:

1. Determine the extent to which the use of ICT facilitates the functions of school administrators.
2. Investigate the extent to which the use of ICT encourages the professional development of teaching and non-teaching staff.
3. Assess the degree to which ICT facilitates teaching and learning in schools.

Thus, to achieve the above objectives, the following questions were asked:

1. To what extent does the use of ICT facilitate the functions of school administrators?
2. To what extent does the use of ICT encourage the professional development of teaching and non-teaching staff?
3. To what extent does the use of ICT facilitate teaching and learning in schools?

The study also proceeded by formulating null (Ho) and alternative (Ha) hypotheses that would be either accepted or rejected based on statistical analyses of the findings.

The hypotheses for question 1 were:

- Ho1: The use of ICT does not facilitate the functions of school administrators.
- Ha1: The use of ICT facilitates the functions of school administrators.

The hypotheses for question 2 were:

- Ho2: The use of ICT does not encourage the professional development of teaching and non-teaching staff.
- Ha2: The use of ICT encourages the professional development of teaching and non-teaching staff.

The hypotheses for question 3 were:

- Ho3: The use of ICT does not facilitate teaching and learning in secondary schools.
- Ha3: The use of ICT facilitates teaching and learning in secondary schools.

The following section presents a brief literature review on various uses of ICTs in the educational sector, specifically for administration and teaching/learning. The study methodology is then discussed, and the study results and analysis of the findings are presented. The paper ends with some specific recommendations for educational institutions in Cameroon, which could apply to similar low-resource settings.

34.2 Review of ICT Use in Education

34.2.1 ICT Use for Administration and Professional Development

We noted earlier that ICTs had permeated different sectors of the economy. Technological advances have also led to the development of new management techniques (Mbua 2002) that benefit the education sector. The efficient use of ICTs helps guide decision making. School administrations must support this adoption to benefit teachers by integrating technology into their classrooms (Sandholtz et al. 1997; Bennett 1995). In addition, good interpersonal skills are essential as the administrator works with people.

To improve teacher performance and professional growth, school administrators must provide basic teaching materials (Mbua 2003). For effective professional development, the focus should be on the administration's leadership and commitment, as the school fosters collaborative working, providing quality assistance and support.

34.2.2 ICT Use in Learning

ICT often takes a learner-centered approach to instruction, helping to guide learners in their educational journey (Nganji 2018). In technology-enhanced learning, the responsibility for learning falls on the learner, and the instructor acts as a coach, facilitator, and tutor (Perrucci et al. 2020). Many students are motivated by feeling they are in control of their learning (Barak 2010).

Although computers can improve learning outcomes for students, this can only come about if they are appropriately used (Dede 1998). Designing learning environments so that students can effectively manage their learning can motivate them to interact positively with learning systems (Nganji 2018). Thus, the use of ICT empowers students to be more independent and actively control their learning process. When this learning is online, there is also flexibility as to when and where learning occurs.

34.2.3 ICT Use in Teaching

Today, technology offers alternative ways to deliver instruction and is fast becoming essential, primarily due to the COVID-19 pandemic. Several studies have documented this shift to online learning in situations like pandemics when people cannot meet in a physical location (Marchlik et al. 2021; Pozo et al. 2021).

Although technological developments have driven educational systems mainly in the global North, most educational systems in Sub-Saharan Africa seem to be left

behind due to lack of infrastructure. Due to many inequalities in higher education in low- and middle-income countries, online education has been touted as one of the solutions (Reinders 2021). Thus, it is crucial to investigate this.

34.2.4 Access to ICTs in Schools in Sub-Saharan Africa

Although ICTs are beneficial for schools, sub-Saharan Africa (SSA) still faces significant challenges to adopting their widespread use in schools. For instance, (Tilya et al. 2018) noted some of the challenges were insufficient budget and inadequate ICT infrastructure, with the unavailability of electricity as a significant hindrance to ICT growth. Samarakoon, Christiansen, and Munro (Samarakoon et al. 2017) corroborate these challenges with their study in Sierra Leone. Asongu and Odhiambo (2019) argue that this lack of infrastructure makes education in SSA sub-standard compared to other world regions.

Another critical challenge to online learning is the unreliable Internet infrastructure. A survey of 2341 lecturers and students from Ghana, Kenya, and South Africa (Porter et al. 2016) recorded extremely low satisfaction with Internet connection, cost, and reliability.

In Cameroon, the challenge to ICT adoption and use in schools has been related to inadequate access to ICTs, poor infrastructure, and the lack of skills to use the ICTs (Samarakoon et al. 2017). Although there are challenges with access to computers in schools, mobile phone use is rising (Haji et al. 2017) in Africa. It is positively utilized to drive other sectors in Cameroon, such as agriculture (Nzie et al. 2018). Also, in the Cameroon education sector, studies have recommended adopting social media in education (Kuika Watat et al. 2020).

34.3 Methodology

The survey research design was descriptive, with a questionnaire as the data collection tool. The questionnaire used a five-point Likert scale as follows: Strongly agree (SA) = 5, agree (A) = 4, neutral (N) = 3, disagree (D) = 2, and strongly disagree (SD) = 1. The items in the questionnaire were developed from the research questions and review of related literature. The questionnaire was divided into two sections, A and B.

Section A aimed at collecting demographic data. Section B focused on the various research questions, the problems of ICT implementation and its utilization in schools, and suggested solutions. The questionnaire had open-ended and closed-ended questions. Both face and content validity were ensured before data collection. The printed questionnaires were administered directly to the respondents after obtaining ethical clearance and approval for data collection. A total of ninety (90) questionnaires were administered, and ninety (90) returned, giving a return rate of 100%.

34.3.1 Study Population

The study was carried out in the Fako Division, an English-speaking region with four sub-divisions; it is one of the six divisions of the Southwest Region of Cameroon. The target population consisted of 128 administrators (mainly principals and vice-principals) in the 73 schools in the Fako Division. The schools included 25 public (25 principals and 38 vice-principals), 18 denominational (18 principals and 11 vice-principals), and 30 lay private (30 principals and six vice-principals) schools. Of the 128 administrators in all the schools, we randomly selected a sample of 90 administrators for the study.

34.3.2 Data Collection and Analysis

Descriptive statistics based on frequencies and percentages were used for analyses. The Statistical Package for Social Sciences (SPSS) was used to analyze the data, and the analysis of variance (ANOVA) was used to verify the hypotheses.

34.4 Results

In this section, the survey results are first presented then discussed, considering other studies conducted in Cameroon. This helps provide insight into whether there is progress in adopting ICTs in schools in Cameroon. The discussion paves a way to look to the future of technology-enhanced learning in Cameroon.

34.4.1 Demographic Data

The results collected showed 73.33% males (66) and 26.67% females (24), reflecting a gender imbalance of school administrators. Also, 88.89% of respondents were administrative heads of secondary and high schools (80), while 11.11% were administrative heads of secondary Schools (10) only.

This implies there are more administrators in secondary and high schools than in secondary schools only. Most administrators (57.78%) were vice-principals (52); 42.22% were principals (38). The largest number (29) of administrators had a Bachelor's degree as their highest educational qualification (32.22%). In contrast, others (21) had as highest qualification the DIPES II /Equivalent (23.64%), the DIPES I/Equivalent (20), and Master's degree (20), the latter two being 22.22%. DIPES is a diploma obtained from a teachers training college in Cameroon. There were 55.56% of school administrators with working experience of 0–5 years, 33.33%

with working experience of 11–15 years, 6.67% between 16–20 years, and none had working experience more than 20 years.

A close examination of the results shows that more than half of the respondents had a working experience of 0–5 years. All the respondents had knowledge of ICT use in their schools.

34.4.2 The Extent to Which the Use of ICT Facilitates the Functions of School Administrators

During this study, the first question was, "To what extent does the use of ICT facilitate the functions of school administrators?" The results are presented in Fig. 34.1. From the statistical analysis of the individual responses, we observed that the mean decreases in descending order from the first variable (strongly agree) to the last (strongly disagree). The standard deviations decrease from the first variable to the second, then increase with the third variable, and subsequently decrease from the fourth variable.

The total mean (17.89) is greater than the total standard deviation (14.55). The null hypothesis is therefore rejected, and the alternative hypothesis is accepted. Thus, it can be concluded that the use of ICTs facilitates the functions of school administration within this study population.

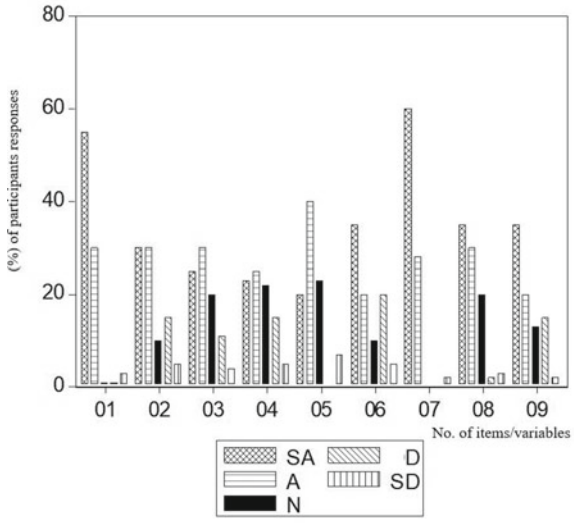

Fig. 34.1 How ICT facilitates school administration

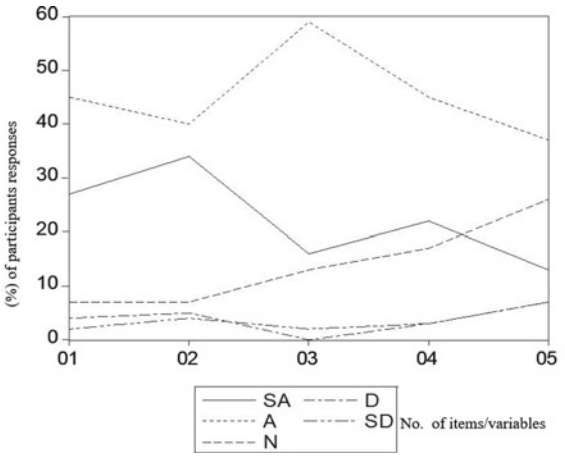

Fig. 34.2 How ICT facilitates professional development

34.4.3 The Extent to Which the Use of ICT Encourages Professional Development of Teaching and Non-teaching Staff

This research also sought to answer the question, "To what extent does the use of ICT encourage the professional development of teaching and non-teaching staff?" The results are presented in Fig. 34.2.

Statistical analysis of the responses revealed that the mean of the entire variables (17.89) is greater than the standard deviation of all the variables (14.55). The mean increases from the first variable (strongly agree) to the second (agree) and then decreases from the third variable (neutral) to the last (strongly disagree); the standard deviation decreases from the first variable to the last. Thus, the null hypothesis is rejected, and the alternative hypothesis is accepted: The use of ICTs encourages the professional development of teaching and non-teaching staff.

34.4.4 The Extent to Which the Use of ICT Facilitates Teaching and Learning in Schools

This research also sought to answer the question, "To what extent does the use of ICTs facilitate teaching and learning in secondary schools?" The results are presented in Fig. 34.3.

Based on a statistical analysis of the responses, we observed that the value of all means (17.89) is greater than the value of all standard deviations (13.77). Also, the mean values and standard deviations fluctuate with variables from the first (strongly agree) to the last (strongly disagree). The null hypothesis is therefore rejected, and the alternative hypothesis is accepted.

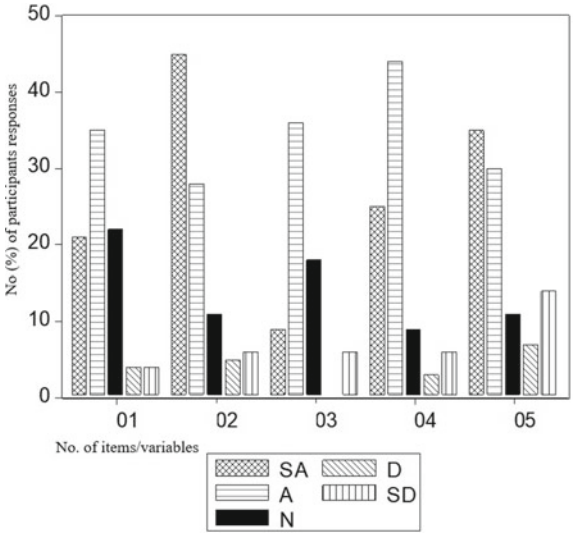

Fig. 34.3 How ICT facilitates teaching and learning

The results show that the use of ICTs facilitates teaching and learning in secondary schools.

34.4.5 Challenges to ICT Implementation and Use in Secondary School Administration

When asked the major challenges faced in implementation, the top reasons given were the following:

1. Budgetary constraints in purchasing and maintaining ICT equipment (44%).
2. Most administrators, teachers, support staff, and students are not computer literate (22.2%).
3. Lack of qualified ICT personnel for laboratory sessions (11.11%).
4. Small computer laboratory with a high student-per-computer ratio (8.90%).
5. Many schools have not yet grasped the importance of ICT (7.78%).
6. Nonchalant attitude toward ICT (3.33%).
7. The absence of Internet in some schools (2.22%).

34.5 Discussion

This study shows that ICTs facilitate the functions of school administrators, professional development, teaching, and learning. It is worth discussing these findings and how they compare to others conducted in Cameroon.

34.5.1 ICTs Facilitate the Functions of School Administrators

Analyzing the data from our study about the role of ICTs in administration reveals that computers are gradually being adopted into the secondary education sector in the Fako Division. For the schools with access, ICTs play an essential role in facilitating teaching and learning and helping to facilitate the duties of school administrators. With technology, humans are more efficient and faster. Preparing reports and managing recruitment and human resources are easier with ICTs.

Although the importance of ICTs has been acknowledged and most schools want to adopt them, a similar study on their use in secondary school administration in Buea, Cameroon, found limited use (Njouny 2021). This could be attributed to the lack of adequate financial resources to purchase the equipment and, in some cases, low digital literacy among secondary school administrators and teachers.

34.5.2 ICTs Facilitate Professional Development

The results from our survey show that the use of ICTs encourages the professional development of teaching and non-teaching staff. This involves using the ICTs to gain new skills, which also opens the staff to new content and opportunities. A connection to the Internet facilitates communication with other colleagues elsewhere, which can also help their professional development.

Despite these benefits, a study conducted in Bamenda in the Northwest Region, the second of only two English-speaking regions in Cameroon, found that many teachers still oppose incorporating technologies into classrooms (Mbakwa 2019). A survey administered to 34 secondary school students and 13 teachers through WhatsApp, Facebook, and Telegram showed that most schools were still practicing the "chalk and talk" system where students rely on teachers for lectures in a physical classroom, and there is no online component. Although the teachers still prefer this teaching method, that study also found that financial constraints were one of the causes hindering adoption of technology-enhanced education.

34.5.3 ICTs Facilitate Teaching and Learning

The adoption of ICTs has proven to be very beneficial in facilitating teaching and learning. The current global COVID-19 pandemic has shown how important this is, especially when students and teachers cannot be in the same physical classroom. The move to online learning gives the student some autonomy and allows the teacher to guide the student.

Responses from the respondents in our study showed that ICTs facilitate teaching and learning. Although a study in Cameroon reported that some teachers were less favorable to adopting ICTs in teaching, students, on the other hand, have generally been in favor of using ICTs in education (Mbah 2010). However, the challenge is that most people do not own a personal computer and rely on access via internet cafes.

34.5.4 Toward Mobile Learning (M-Learning) in Cameroon

Considering these findings, it is worth discussing the types of devices being used and the potential for broader adoption of technology-enhanced learning in Cameroon. A survey of ten schools in Yaoundé in the Central Region, which is French-speaking, examined the types of devices used in schools (Ngoungouo 2017). The study found that some schools mainly used computers, telephones, and projectors with minimal use of learning management systems for course delivery.

Nevertheless, given the current need to adopt technology-enhanced education during the COVID-19 pandemic, some studies have focused on how Cameroon has responded to this challenge. Through document analysis, interviews, and observations, the study by Béché (2020) found various initiatives to adapt during the pandemic, albeit with little infrastructure. The national television was used to deliver courses for students who were preparing for their final examinations. Selected teachers delivered the courses while students all over the country watched and took notes and received support from parents. One of the challenges with such delivery was the unreliable electricity supply in a country with frequent power outages. University students were reportedly using other technologies such as WhatsApp, Skype, and Zoom for learning and a limited number of learning management systems.

Given the high rate of mobile phone penetration (Stork et al. 2012) and the limited availability of affordable personal computers, school administrators and educational developers must start moving toward mobile learning (m-learning), which might be more effective. This requires the government to collaborate with telecommunication providers to lower the cost of providing mobile Internet to students. Affordability will encourage more learners to engage in technology-enhanced learning.

34.6 Conclusion and Recommendations

This study aimed to investigate how information and communication technologies can facilitate administration in secondary schools in the Fako Division of Cameroon. Based on the study's findings, it can be concluded that the use of information and communication technologies facilitates school administrators' functions, encourages the professional development of teaching and non-teaching staff, and facilitates teaching and learning in secondary schools.

Given that the data in this study only focused on selected schools and only analyzed information collected from 90 respondents, care should be taken when interpreting the results. Further studies in a broader population are encouraged. Nevertheless, the results provide valuable insights that we can recommend to other schools looking to incorporate ICTs.

The recommendations are as follows:

- Due to financial constraints, the government should purchase ICTs for schools and ensure frequent maintenance for continuous use. Provisions could be made directly from government coffers or indirectly through foreign aid and Non-governmental Organizations (NGOs).
- ICT instructors available in schools should be well trained or highly recommended by the government and other organizations.
- ICT training should be offered to leaders and staff on using ICTs in schools effectively for success in attaining the institutions' goals.

This study was restricted to administrative heads (principals and vice-principals) of secondary schools in the Fako Division. Future studies should be extended to other school administrators and cover the entire Southwest Region to obtain a better picture and impact of technology on administration in secondary schools.

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