

PRINCIPALS' USE OF ICTS IN ADMINISTRATIVE FUNCTIONS AND THE CHALLENGES FACED IN THE ADMINISTRATION OF SECONDARY SCHOOLS IN THE SOUTH WEST REGION OF CAMEROON

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Abstract

The study investigates principals' use of Information and Communication Technologies (ICTs) in administrative functions and the challenges faced in the administration of secondary schools in the South West Region of Cameroon. To achieve this objective, the research question was stated from which the hypothesis was formulated. A mixed method approach with the convergent-parallel mixed design was adopted for the study. A questionnaire and interview guide was used to collect data. The sample size comprised of 143 principals. The purposive sampling technique was used. The instrument was validated and reliability checks were done through a pilot study. Data from questionnaire was analyzed through descriptive statistics -frequencies, percentages, and multiple responses set (MRS). The hypothesis was tested using Simple Linear regression analysis. Qualitative data were analysed using thematic analysis. Findings revealed that the use of ICTs in administrative functions is statistically a strong and significant predictor of the challenges faced by principals ($\beta = .755$, $t = 35.034$, $p < 0.000$). This indicates that a one per cent increase in the use of ICTs will lead to a 75.5% increase in the challenges faced by principals in administration. To add, some of the challenges faced by principals in the use of ICTs include: poor internet connection, frequent power cut, inadequate facilities, lack of ICT skills, and lack of technical support. Based on the findings, it was recommended that the Ministry of Secondary Education should give priority to providing, ICT devices, internet facilities as well as electrical power devices such as generators and solar systems to improve on ICT access and usage in the administration of secondary schools. Training should also be provided to principals on how to use ICTs.

Keywords:

Principals, ICTs, administrative functions, challenges faced in administration.



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Résumé

Cette étude examine l'utilisation des technologies de l'information et de la communication (TIC) par les chefs d'établissement dans l'exercice de leurs fonctions administratives, ainsi que les défis auxquels ils sont confrontés dans la gestion des établissements d'enseignement secondaire de la région du Sud-Ouest du Cameroun. Pour atteindre cet objectif, une question de recherche a été formulée, à partir de laquelle une hypothèse a été élaborée. L'étude a adopté une approche méthodologique mixte, reposant sur un devis convergent parallèle. Les données ont été recueillies à l'aide d'un questionnaire et d'un guide d'entretien auprès d'un échantillon de 143 chefs d'établissement, sélectionnés selon une technique d'échantillonnage raisonné. Les instruments de collecte des données ont été soumis à une procédure de validation, tandis que leur fiabilité a été vérifiée à travers une étude pilote. Les données quantitatives ont été analysées à l'aide de statistiques descriptives, notamment les fréquences, les pourcentages et l'analyse des réponses multiples (MRS). L'hypothèse de recherche a été vérifiée au moyen d'une analyse de régression linéaire simple, tandis que les données qualitatives ont fait l'objet d'une analyse thématique. Les résultats révèlent que l'utilisation des TIC dans les fonctions administratives constitue un prédicteur statistiquement fort et significatif des difficultés rencontrées par les chefs d'établissement ($\beta = 0,755$; $t = 35,034$; $p < 0,000$). Selon l'interprétation présentée dans l'étude, une augmentation de 1 % de l'utilisation des TIC entraînerait une augmentation de 75,5 % des difficultés rencontrées par les chefs d'établissement dans l'exercice de leurs fonctions administratives. Parmi les principaux défis identifiés figurent la mauvaise qualité de la connexion Internet, les interruptions fréquentes de l'alimentation électrique, l'insuffisance des équipements informatiques, le manque de compétences en TIC et l'absence d'assistance technique adéquate. Au regard de ces résultats, l'étude recommande au ministère des Enseignements secondaires d'accorder une attention prioritaire à la fourniture d'équipements informatiques, à l'amélioration de l'accès à Internet et à la mise à disposition de sources alternatives d'énergie électrique, notamment des groupes électrogènes et des systèmes solaires, afin de renforcer l'accessibilité et l'utilisation des TIC dans l'administration des établissements d'enseignement secondaire. Elle préconise également l'organisation de formations destinées aux chefs d'établissement afin de renforcer leurs compétences dans l'utilisation des TIC.

Mots-clés : *Chefs d'établissement, technologies de l'information et de la communication (TIC), fonctions administratives, défis de la gestion scolaire.*

Introduction

Effective administration in secondary schools is critical for ensuring organizational efficiency, accountability and delivery of quality education. Administrative challenges such as: delays in communication, inefficiencies in record keeping, difficulties in supervision, among others continue to undermine school performance (Mensah, 2005). The integration of Information and Communication Technologies (ICTs) has been widely recognized as a key factor that can enhance administrative processes and reduce such challenges. Principals as the chief administrators of schools, play a central role in leveraging ICTs tools for communication, record management, financial administration, teacher supervision, student management, timetabling and decision-making.

The challenges faced by administrators in the course of using ICTs in administration, are enormous especially those who are not computer literate. In spite of these amazing potentials of the use of ICTs in educational issues, there are bound to be challenges at different levels (Cartera, 2005). They stipulated that, there are eminent challenges in secondary schools concerning the use of ICTs in administration. Some of these challenges may include: computer breakdown, inadequate staff training, limited computer hardware and software dedicated to administrative tasks, limited accessibility and network connection, limited technical support, lack of effective training, limited time and lack of teachers' competency among others. There is also, the problem of mismanagement of examination exercise in schools, and this involves delayed submission of examination

records, loss of marks and miscalculation of marks (Byaruhanga, 2002). Considering such problems like financial and examination mismanagement, poor record keeping coupled with poor information flow, the effects can be seen in low-performance level of students and staff, strikes, declining academic standards and the eventual closure of schools (Visscher, 2001). This is a serious threat to education administration in the nation (South West Region inclusive).

This claim was yet to be confirmed with the case of the principals of secondary schools in the South West Region of Cameroon. This study therefore, focused on the investigation of the relationship between principals' use of ICTs in the administrative functions and the challenges faced in the administration of secondary schools in the South West Region of Cameroon.

Problem

Principals are the main pivots and gate keepers in secondary schools. The principals are the ones to take a careful and systematic arrangements or organization and use of human, financial and material resources, and programs to achieve educational goals. They are expected to keep school records for proper retrieve. Instructional supervision is at their duty to maintain and sustain quality education. They are responsible for the financial accountability of the institution. In fact, the principal has the responsibility to ensure that the school goals and objectives are achieved as the executor of educational policies.

The researcher discovered through interaction, that in spite of the huge administrative duties and responsibilities, some principals often have problems with sending administrative information appropriately. Most often, they need assistance to type, format and edit information before disseminating. They are less able to access administrative record/data online or onsite without the assistance of a secretary. Tracking disciplinary incidence, teacher supervision, accessing student information without being helped, remains a great worry to most administrators. The management of personnel's files on soft copies, keeping school community relationship by creating WhatsApp groups, store and retrieve personnel's contacts and creating e-mails by themselves is a nightmare to most of them. The provision and maintenance of physical facilities and financial management and storing receipts in soft copies among others is challenging to some of them.

This can be a serious threat to principals' administration of schools. Based on these backdrops, the researcher therefore, sought to investigate on the principals' use of ICTs in administrative functions and the challenges faced in the secondary schools in the South West Region of Cameroon, in order to ascertain this claim.

Therefore, this study seeks to investigate principals' use of Information and Communication Technologies (ICTs) in administrative functions and the challenges faced in the administration of secondary schools in the South West Region of Cameroon.

Literature Review

Administrative functions refer to the set of activities and responsibilities carried out by the principal to ensure the effective and efficient running of a school (Visscher, 2001). According to Fonkeng and Tamanjong (2009), administrative functions involve the process of planning, organizing, communicating, coordinating and controlling organizational resources to achieve set goals. In the context of education, Mbua (2003) defined administrative functions as those duties performed by the school head to coordinate human and material resources toward the attainment of educational objectives. Similarly, Bush (2005) views administrative functions as leadership and

management activities that enable a school to maintain order, implement policy and improve teaching and learning. In Cameroon, administrative functions of principals are further outlined in MINESEC texts as those duties that ensure compliance with government regulations and the smooth operation of the school (Republic of Cameroon, 1998).

Njoku (2006) pinned that principal's challenges in their administrative functions can be in a category of ICTs use to disseminate information. ICTs include wired and wireless local and wide area networks and hardware and software providing the capabilities for administrators to communicate with each other or with users. ICTs means any instrument, equipment, machine, or other device that facilitate telecommunication, including, but not limited to, a computer, computer network, radio broadcasting systems, computer chip, computer circuit, scanner, telephone networks, internet, cellular telephone, pager among others. The four types of telecommunications include verbal communication, non-verbal communication, written communication and visual communication (Afzaal, 2012).

According to Byaruhanga (2002), implementation of ICTs is occurring in a context where the cultural and institutional barriers are not well addressed. The assumption often made is that if one purchases a few computers and modems, a post-industrial society can magically result. Africans and those in the Asia-Pacific are generally in the position of consumers and thus in a position where they cannot yet define media in their terms. In relation to this, it's worth noting that ICTs implementation handicaps are unique in different set ups.

Information and Communication Technologies (ICTs) are the use of computers and other technology in the management of information and other organizational activities. ICTs offers new capabilities that resulted in significant changes in organizations, enhanced new methods of information dissemination within and also outside the organization. Mensah (2005) stated that ICTs use in the work environment help individuals to acquire an inquiring, critical and creative mind to capitalize on the opportunities provided by the explosive growth of information, knowledge and technology. ICTs use in the 21st century school environment is part of the technological modernization of educational administration. The ultimate goal of engaging ICTs in schools administration is because of the capacity of the devices to automate processes and achieve efficiency and effectiveness in the tasks of instructional supervision, management of staff, students and facilities, community relations, and school business operations. Therefore, Information Communication Technology devices are the engine for growth and empowerment and their uses are indispensable for effectiveness and efficiency in modern day organizations (Mensah, 2005).

Like individual organisms, a schools' success depends on how well their characteristics and behavior align with their surroundings. The environment also provides key resources that sustain the organization and lead to change and survival. The system theory has the potential to provide a synthesis that is a way of combining the rational and natural perspectives. Schools are complex and dynamic. They have formal structure to achieve specific goals but are composed of people who have their own idiosyncratic needs, interest and beliefs that often conflict with school expectations. Thus, schools have: (1) planned and unplanned features (2) rational and irrational characteristics and (3) formal and informal structures. In fact, over time, the relative emphasis on rational and natural concerns changes and these shifts in structure are associated with environmental conditions. However, in all organizations (schools inclusive) both rational and natural elements co-exist within a system that is open to its environment (Ebot-Ashu, 2014). In fact, the school filters inputs (students admitted) and outputs (students graduate).

To relate to this study, various inputs play complimentary roles in ICTs use in school administration. Significant among these include: the principal and teachers' ICTs literacy, attitude towards ICTs, ICTs infrastructure and ICTs policies. Other inputs in the school which make up the system include: technologies, stakeholders, infrastructures and other school departments. These inputs go through a process where they are planned, organized, motivated and controlled by the school head, to meet the school's desired standards (Mbua, 2003).

Method

This study adopted the convergent-parallel mixed design. The mixed method was used with the quantitative and qualitative approaches employed. By triangulating quantitative and qualitative instruments in this study, it helped the researcher to validate findings through convergence of data, explained unexpected findings and also provided a richer context to statistical relationships.

Findings

To provide appropriate responses to the research question how do principals' use of ICTs and the challenges they face affect the administrative functions in secondary schools, nine questions items were constructed in the questionnaire. The findings obtained are presented as follows:

Table 1: *Principals' opinion on the challenges faced in the use of ICTs*

Items	Stretched				Collapsed	
	Always (A)	Often (O)	Sometimes (S)	Never (N)	Always	Sometimes
Frequent electricity cuts	52 (38.0%)	68 (49.6%)	17 (12.4%)	0 (0.0%)	120 (87.6%)	17 (12.4%)
Lack of space for ICTs	41 (29.9%)	60 (43.8%)	36 (26.3%)	0 (0.0%)	101 (73.7%)	36 (26.3%)
Poor internet connection	57 (41.7%)	65 (47.4%)	15 (10.9%)	0 (0.0%)	122 (89.1%)	15 (10.9%)
Lack of finance for data purchase	65 (47.4%)	48 (35.0%)	18 (13.1%)	6 (4.5%)	113 (82.4%)	24 (17.6%)
Lack of WhatsApp groups	35 (25.5%)	49 (35.8%)	53 (38.7%)	0 (0.0%)	84 (61.3%)	53 (38.7%)
Lack of cooperation from teachers	23 (16.8%)	42 (30.7%)	57 (41.7%)	15 (10.9%)	65 (47.5%)	72 (52.5%)
Limited skills in the use of ICTs	50 (36.5%)	72 (52.6%)	15 (10.9%)	0 (0.0%)	122 (89.1%)	15 (10.9%)
Limited knowledge on ICT	57 (41.7%)	49 (35.8%)	31 (22.5%)	0 (0.0%)	106 (77.5%)	31 (22.5%)
Inadequate ICT devices	45 (32.8%)	56 (40.9%)	36 (26.3%)	0 (0.0%)	101 (73.7%)	36 (26.3%)
Multiple Response Set (MRS)	425 (34.5%)	509(41.3%)	278 (22.5%)	21 (1.7%)	934 (75.8%)	299 (24.2%)

n = 143

Focusing on the Multiple Response Set (MRS) reveals that generally, majority (75.8%) principals face challenges in the use of ICTs. For example, most (87.6%) respondents face frequent electricity cuts, lack of space for ICTs (73.7%), poor internet connection (89.1%), lack of finance for data purchase (82.4%), lack of cooperation by parents in school WhatsApp groups (61.3%), limited skills in the use of ICTs (89.1%), limited knowledge on the different ICT tools necessary for administration (77.5%) and inadequate ICT devices (73.7%). However, a challenge experienced by few of them (47.5%) is lack of cooperation from teachers which implies that a greater majority of principals have teachers support in the use of ICTs.

Presentation of Qualitative Findings

Analysis of principal interviews on use of ICTs and the challenges face in the administrative functions

Interviews conducted with the principals reveals that they use ICTs for administrative purposes such as storage of correspondence and student information; retrieval of information; preparation of correspondence, minutes, speeches and reports; analyzing data for reporting; and for preparing presentations slides. They also said that ICT tools help in the systematic presentation of office work and for saving and storing office documents.

Record keeping and data management

Findings revealed that principals' use ICTs such as computer to store students and staff data as well as equipment. Using ICT makes it easy for administrators to keep records. A principal indicated: *"I store students and teachers' information in a computer; it helps us to quickly retrieve information easily."* (P 1) In relation to storage and data management another denoted; *"I use ICTs to store and retrieve students and personnel information as well as documents. This makes it easier for me to access them."* (P 2) One of the respondents also explained: *"ICT tools assist 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"* (P 4, 6).

Another respondent noted, *"In the past, the school manually managed a large volume of records, which were at risk of being lost. Undoubtedly, advancements in ICT have made it possible to store, retrieve, and transfer information cheaply or even at no cost"* (P 7). Captured in the voice of P 9, *"With ICTs it is easier for me to keep vital information concerning the school, workers and even facilities."* (P 8, 10) Also another respondent added: *"I have my personal laptop where I store all information concerning the school and I can easily retrieve it anytime it is needed by hierarchy. Also, information stored on computers is safer and secured as compared to those in files."* (P 11) To add, another respondent added: *"I use a computer to type and store all school records in the computer for security and time saving and accessibility"* (P 12, 15)

Preparation of documents and reports requested by hierarchy

The second theme identified in the use of ICTs is the preparation and presentation of reports. Findings revealed that principals use ICTs like computers, laptop, and printers to prepare their reports for submission. A participant stated: *"I use a computer and printer to type and print school documents."* (P 3) Another respondent added: *"I type and print reports demanded by hierarchy on a computer. Copies are also stored for reference."* (P 5) Similarly, another respondent mentioned: *"I use my laptop to prepare official documents."* (P 6) To add, another respondent added: *"I use the photocopying machine to make extra copies of office documents"* (P 4).

Preparation of students' examination reports

The study's findings indicated that the principals acknowledged the value of using ICTs software such as MS Excel in facilitating the processing of student's examination reports. 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."* (P 1) Another respondent added: *"Before the coming of computer, we filled report cards with hands 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"* (P 8). Similarly, another respondent mentioned, *"ICT has simplified the preparation of students'*

reports. We can now compute students' marks and grades using Microsoft Excel, unlike before when we wasted a lot of time preparing reports manually." (P 16)

Monitor school activities

A respondent noted: "I always go through academic data of students to monitor their progress in school and evaluate performance." (P 7) Similarly, another respondent stated: "Cameras are positioned in strategic places to ensure that there is strict monitoring of activities in school." (P 8) Another respondent highlighted: "We use students' examination spreadsheets to monitor students' progress in school and evaluate performance. This information can also be given anytime needed." (P 3) To add, another respondent voiced: "We monitor and follow up parents' discussions in the school WhatsApp forums which enable us to work on improving on the school." (P 16).

Verification of hypothesis

Table 2: Use of ICTs in administrative functions and challenges faced by principals

Model	R	R Square	Adjusted R-Square	Std. Error of the Estimate
1	.927 ^a	.859	.859	.27956
a. Predictors: (Constant): Use of ICTs in administrative functions				
b. Dependent Variable: Challenges				

(R2) = Coefficient of Determination

The findings show the correlation coefficient between principals' use of ICTs in administrative functions and challenge they face as 0.927. The results revealed that there exists a very strong and positive association between the use of ICTs in administration and challenges faced by principals. The results also revealed that the coefficient of determination (R2) for the correlation coefficient of 0.927 was 0.859. The coefficient of determination (R2) of 0.859 indicates the use of ICTs in administration significantly predicts the challenges faced by school principals. This implies that the use of ICTs in administration functions accounts for 85.9% of the challenges faced by principals in school administration. This indicates that 14.1% of the challenges faced are due to other factors than use of ICTs. The high value of adjusted R2 (0.859) implies that the model is suitable for predicting the challenges faced by principals in secondary schools.

Discussion

The extent and relationship between principals' use of ICTs in their administrative functions and the challenges they face in the administration of secondary schools in the South West Region of Cameroon was evaluated and findings revealed that principals to a low extent make use of ICTs in administrative functions and there exist a very strong and positive relationship between the use of ICTs and challenges faced by principals in the administration of secondary schools. By implication, principals' use of ICTs in administrative functions is statistically a significant

This finding is in agreement with Visscher (2001) who indicated that despite significant investment in training and resources, in reality, majority of schools are still far below the level of ICT use. On the relevance of data in the education system, Mbua (20003) argued that effective record keeping is vital to educational development. In addition, Byaruhanga (2002) emphasized that it will be an impossible task to plan and administer any institution in which records are not kept or are carelessly and fraudulently kept.

Consequently, the educational planners and administrators need to have adequate and accurate data of student enrolment and school personnel records for effective planning and management of schools but these are in place. One cannot over-estimate the utilization of ICT in everyday activities of the school. ICT assist the school administrators to meet the task of school management in the areas of planning and administrations. In support of this, Cartera (2005) argued that the introduction of ICT in schools enhances the daily school routines, programmes, solving individuals or groups' problems, as well as staff development, but availability and competences of the users posed a challenge.

Finding revealed that principals use ICTs for record keeping. The findings indicated that heads of schools perceived that ICT advances in schools helped to address their problems of data storage. The principals indicated that ICT tools are used and are crucial in improving the storage of both administrative and academic records in secondary schools. These findings align with the work of Njoku (2006), who underscored the diverse applications of ICT in administrative functions, from data storage to decision-making. Additionally, Mensah (2005) found that ICT effectively addresses challenges related to record mismanagement and provides easy access to comprehensive school records.

Concluding Remarks

The study examined principals' use of ICTs in administrative functions and challenges they face. Based on the findings, it could be concluded that it is used mainly for record keeping and retrieval of student and staff information. The use of technology facilitates administrative work and supports decision making. However, challenges in using these devices include, lack of ICT skills and limited computers. It was thus concluded that there is a significant relationship between use of ICTs in administrative functions and challenges faced by school principals in administration.

This study investigated principals' use of Information and Communication Technologies (ICTs) in performing administrative functions and the challenges encountered in the administration of secondary schools in the South West Region of Cameroon. The investigation was motivated by the increasing importance of digital technologies in contemporary educational administration and the persistent difficulties experienced by school administrators in integrating these technologies into their daily professional responsibilities. Using a convergent-parallel mixed-methods research design, the study examined the relationship between ICT utilisation and administrative challenges, drawing on quantitative and qualitative evidence obtained from secondary school principals.

The findings established that Information and Communication Technologies have become important instruments for facilitating various administrative responsibilities in secondary schools. Principals reported using ICT facilities for record keeping, storage and retrieval of students' and personnel information, preparation of official correspondence, production of administrative reports, processing of examination results, communication with educational stakeholders, and monitoring of school activities. These findings demonstrate that digital technologies provide opportunities for improving administrative organisation, information accessibility, documentation, and institutional communication. The qualitative findings particularly revealed that computerised record management enables school administrators to retrieve information more conveniently, prepare documents more efficiently, and reduce some of the difficulties traditionally associated with manual administrative procedures.

Despite these benefits, the study revealed that the integration of ICTs into school administration remains constrained by substantial infrastructural, technical, financial, and human-resource challenges. The descriptive findings indicated that 75.8% of the

aggregated responses reflected frequent experiences of ICT-related administrative challenges. Poor internet connectivity and limited ICT competencies were among the most frequently reported difficulties, each accounting for 89.1% of responses within the relevant categories. Frequent electricity interruptions were reported by 87.6% of respondents, while financial constraints associated with purchasing internet data affected 82.4%. Furthermore, 77.5% reported limited knowledge of relevant ICT tools, and 73.7% identified inadequate ICT devices and insufficient space for ICT facilities as important challenges. These findings suggest that the effective utilisation of digital technologies in school administration depends not merely on their availability but also on the institutional conditions necessary to support their sustainable application.

The inferential findings further demonstrated a strong positive statistical relationship between principals' use of ICTs in administrative functions and the challenges encountered in school administration. The regression analysis produced a correlation coefficient of $R = 0.927$ and a coefficient of determination of $R^2 = 0.859$, indicating that the model explained approximately 85.9% of the observed variance in reported administrative challenges. The standardised regression coefficient ($\beta = 0.755$) was also reported as statistically significant. These findings suggest that ICT utilisation and the challenges experienced by principals are closely associated within the study population. However, the positive relationship should not be interpreted as definitive evidence that increased ICT utilisation directly causes administrative difficulties. Rather, it may reflect the fact that principals who engage more extensively with digital technologies encounter greater exposure to infrastructural deficiencies, technical limitations, and operational constraints. Establishing the direction and causal mechanisms of this relationship would require additional investigation.

The findings also underscore the importance of professional competence in determining the effectiveness of ICT integration. Although digital technologies offer considerable administrative advantages, their potential cannot be fully realised when school administrators lack adequate digital literacy, technical assistance, and opportunities for continuous professional development. Principals who possess limited technological competencies may experience difficulties using computer applications, maintaining electronic records, processing academic results, managing digital communication platforms, and accessing administrative information. Consequently, ICT integration should be understood as both a technological and a human-capacity development process requiring continuous institutional support.

Another important conclusion emerging from the study concerns the relationship between technological infrastructure and administrative efficiency. The frequent interruption of electricity, unreliable internet connectivity, and inadequate availability of digital devices constitute significant obstacles to the effective functioning of ICT-supported administrative systems. These conditions may interrupt communication, delay report preparation, restrict access to electronic records, and undermine the continuity of administrative operations. The findings therefore suggest that investments in digital infrastructure must be accompanied by reliable electricity, affordable connectivity, equipment maintenance, and technical support if meaningful improvements in educational administration are to be achieved.

Within the broader context of educational development in Cameroon, the findings highlight the need to strengthen institutional preparedness for digital transformation. Secondary schools are increasingly expected to maintain accurate records, facilitate timely communication, monitor academic performance, ensure administrative accountability, and respond efficiently to directives from educational authorities. The successful execution of these responsibilities requires school administrators who are

technologically competent and institutions that possess adequate digital resources. Without deliberate interventions to address existing challenges, disparities in ICT accessibility and utilisation may continue to influence the administrative capacities of secondary schools.

In conclusion, the study establishes that ICTs constitute valuable resources for contemporary secondary school administration, particularly in information management, communication, academic reporting, and administrative coordination. Nevertheless, their effective integration is constrained by persistent challenges relating to infrastructure, connectivity, electricity, finance, technical support, and professional competence. The study therefore concludes that improving ICT-supported educational administration in the South West Region of Cameroon requires a coordinated approach involving infrastructural investment, continuous capacity building, institutional planning, and supportive educational policies. Addressing these challenges would create more favourable conditions for principals to utilise digital technologies effectively and strengthen the overall quality of school administration.

RECOMMENDATIONS

Based on the findings and conclusions of the study, several recommendations are proposed to improve the utilisation of Information and Communication Technologies in the administration of secondary schools in the South West Region of Cameroon.

The Ministry of Secondary Education should prioritise the provision of adequate ICT infrastructure in secondary schools. This should include computers, laptops, printers, scanners, reliable internet facilities, appropriate administrative software, and secure electronic record-management systems. The findings revealed that inadequate ICT devices constitute a significant challenge to effective school administration. Consequently, the provision of appropriate technological resources would help principals perform administrative functions more efficiently, improve information management, and reduce dependence on manual administrative procedures. Particular attention should be given to schools with limited technological resources to promote equitable access to digital administrative facilities.

Given the high proportion of principals who reported frequent electricity interruptions, educational authorities should collaborate with relevant stakeholders to improve the reliability of electricity supply in secondary schools. Where uninterrupted public electricity cannot be guaranteed, schools should be supported to acquire alternative energy sources such as solar power systems, inverters, and generators. These facilities would help ensure continuity in administrative operations, reduce interruptions in digital communication, and protect electronic equipment from damage associated with unstable power supply. The development of sustainable energy solutions is particularly important for schools operating in communities with unreliable electricity infrastructure.

The Ministry of Secondary Education, in collaboration with telecommunications service providers and other relevant institutions, should facilitate access to reliable and affordable internet services for secondary schools. Poor internet connectivity emerged as one of the most frequently reported challenges in the study, indicating the need for deliberate measures to strengthen digital communication infrastructure. Educational authorities could explore institutional internet subscription arrangements, negotiated educational data packages, and improved connectivity services for schools. Reliable internet access would facilitate electronic communication, submission of administrative reports, retrieval of educational information, and effective coordination between schools and educational authorities.

Regular training programmes should be organised to strengthen principals' knowledge and practical competencies in ICT utilisation. Such programmes should focus on computer literacy, electronic record management, spreadsheet applications, digital communication, database management, preparation of administrative reports, and the use of relevant school-management software. Training should be practical, needs-based, and responsive to the technological competencies of individual principals. In addition to initial training, refresher workshops and continuous professional development activities should be institutionalised to ensure that school administrators remain familiar with emerging digital administrative practices.

Educational authorities should establish accessible technical support arrangements to assist principals in addressing difficulties associated with the installation, operation, maintenance, and repair of ICT equipment. The study identified inadequate technical assistance as a challenge affecting ICT utilisation. Schools should therefore be encouraged to develop maintenance plans and establish partnerships with qualified ICT technicians or service providers. Where resources permit, schools may designate appropriately trained ICT support personnel to provide routine assistance. Such arrangements would minimise equipment downtime, reduce administrative disruptions, and promote the sustainable utilisation of digital technologies.

Institutions responsible for preparing and developing educational administrators should strengthen the integration of ICT-related competencies into their professional training programmes. School leadership preparation should include practical instruction in digital administration, information management, educational data analysis, electronic communication, and technology-supported decision-making. This would help ensure that prospective principals acquire relevant competencies before assuming administrative responsibilities. Continuous leadership development should also emphasise the relationship between technological innovation, institutional efficiency, accountability, and educational quality.

Secondary schools should be encouraged to develop clear institutional ICT policies that guide the acquisition, utilisation, maintenance, and management of digital resources. Such policies should specify responsibilities for equipment management, data protection, information storage, digital communication, and technological maintenance. School administrators should also prepare realistic ICT implementation plans that identify institutional priorities, available resources, anticipated challenges, and strategies for improvement. These measures would promote coordinated technology integration and reduce the risks associated with unplanned or inconsistent ICT utilisation.

Educational authorities and school management bodies should make adequate financial provisions for ICT development within institutional budgets. The findings revealed that the cost of internet data and inadequate technological facilities constitute major barriers to effective ICT utilisation. Schools should therefore allocate resources for equipment acquisition, software maintenance, internet subscriptions, electricity alternatives, and staff training. Where appropriate, partnerships with development organisations, private-sector institutions, alumni associations, and community stakeholders may be explored to supplement available resources. Such partnerships should operate within applicable educational regulations and accountability procedures.

School principals should be encouraged to progressively strengthen electronic record-management practices. Digital systems can support the organisation, storage, retrieval, and updating of students' academic records, personnel information, examination results, financial documentation, and official correspondence. However, electronic records

should be protected through appropriate access controls, secure backups, and responsible data-management procedures. Training in data security and confidentiality should accompany the introduction of electronic administrative systems. These measures would promote more reliable information management and strengthen administrative accountability.

The Ministry of Secondary Education and relevant educational supervisory authorities should establish mechanisms for monitoring the implementation and effectiveness of ICT-supported administrative practices. Periodic assessments should examine the availability of digital facilities, principals' technological competencies, frequency of ICT utilisation, maintenance arrangements, and administrative challenges. Findings from such assessments should guide future investments, professional development programmes, and policy adjustments. Monitoring should focus not only on the number of ICT devices available but also on the extent to which digital technologies contribute to effective administrative performance.

School principals should be encouraged to establish professional networks through which they can exchange experiences, share digital administrative practices, and seek assistance in addressing common technological challenges. Professional associations, educational seminars, workshops, and appropriately managed digital communication platforms could facilitate such collaboration. Experienced principals may also provide mentoring to colleagues who require additional support in ICT utilisation. This collaborative approach would encourage continuous professional learning and strengthen institutional capacity for technological adaptation.

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