USE OF INFORMATION COMMUNICATION TECHNOLOGY (ICT) ON SCHOOL ADMINISTRATION IN PUBLIC SECONDARY SCHOOLS IN KIMININI SUB-COUNTY, KENYA

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Abstract

Despite the crucial role that school managements play, there has not been much effort put into improving the effectiveness of service delivery for a very long time. ICT integration for effective administration and management has received little to no focus in Kenya's public primary or secondary institutions. The purpose of this study is to examine the role of use of Information Communication Technology (ICT) in school administration in Kiminini Sub-County. A mixed-methods strategy was employed for this research study, targeting 326 principals and teachers as participants. The sample strategy outlined by Krejcie and Morgan (1970) was used, resulting in a sample size of 175 respondents. Data collection methods included questionnaires, observation schedules, and interview timetables. A pilot investigation was conducted to evaluate the reliability and validity of the research questionnaires, with 10% of the sample group from the pilot research participating in Kiminini Sub-County. The internal consistency method was used to establish dependability. Both qualitative and quantitative data were collected, and descriptive statistics using SPSS (Version 23.0) were employed for data analysis. Tables were frequently used to present quantitative data. Qualitative data was analysed through content analysis using a narrative technique to address the study questions. Teachers frequently utilize ICT for administrative tasks, particularly in communication and data analysis. Positive impacts on efficiency and decision-making were noted, yet challenges and limitations were acknowledged. The study concluded that ICT integration has brought notable improvements to school administration, enhancing accuracy, efficiency, and decision-making. The study recommends that to enhance ICT integration, addressing software access and technical support challenges is paramount. Schools should provide comprehensive training on specialized software, fostering an environment of experimentation and learning. Establishing feedback mechanisms to tackle challenges effectively is essential.

Keywords: *Use of ICT, School Administration, Secondary Schools*

INTRODUCTION

The technology of the twenty-first century has evolved into the primary means for the diffusion of knowledge on a global scale. Significant advances in technology have had a positive impact on our societies across a variety of aspects, such as changing people's conceptions of their work, cognitive processes, and means of subsistence. These are only some of the ways in which these changes have occurred. As a direct consequence of this,

educational establishments such as schools have come to the realization that it is critically important to integrate information and communication technology (ICT) in order to raise the bar for academic achievement. Due to the indispensability and relevance of information and communication technology (ICT), its incorporation into the educational sector is an absolute necessity in our modern society. According to Baris and Tosun (2018), information and communication technology (ICT) functions as a powerful instrument for school administration as well as a beneficial tool for increasing teaching and learning. These authors are emphasizing the significance of the aforementioned argument. The United Nations Educational, Scientific, and Cultural Organization's (UNESCO) principal goal is to integrate information and communication technology (ICT) into educational systems in order to increase access on an equal basis for all students. According to a publication by the United Nations Educational, Scientific, and Cultural Organization (UNESCO) on the topic of the role of information and communication technology (ICT) in education, both China and the United States make use of ICT to ease the provision of education that is characterized by effective pedagogy, superior quality, and extensive accessibility. In addition to this, it makes it easier for instructors to advance their professional development and ensures that the educational system is effectively monitored, controlled, and organized. It is not necessary for academic participants to be in the same physical area in order to participate in collaborative and communicative activities through online platforms, as demonstrated by the example of China.

The continent of Africa continues to lag behind in terms of the adoption, utilisation, and expansion of information and communication technology (ICT), despite the substantial advantages that ICT has brought to educational administration in schools worldwide. Consequently, there is a scarcity of high-quality, comprehensively regulated educational institutions and resources accessible to the populace. A more comprehensive approach assumes that schools will be receptive and supportive of the potential advancements that ICTs could bring to education. This assumption is based on the observation made by BECTA (2018) that the utilisation of ICTs in instructional administration is currently not given sufficient emphasis.

Considerable efforts have been undertaken by the public authority to establish an information and communication technology (ICT) framework within educational institutions, along with providing comprehensive training programmes to enhance the ICT competencies of teachers. The overarching objective of these endeavours is to facilitate the successful integration of ICT into the educational landscape. Significant advancements have been made in Kenya with regards to the establishment of an ICT strategic framework and execution methodology. However, the effectiveness of progress made in other domains, particularly in the field of education, is currently under evaluation. This evaluation is necessary due to the various challenges that the education sector is currently facing (Ng'ososey, 2018). The Ministry of Education (MOE, 2012) identified several challenges in the Team Report regarding the need to align training practices with the provisions of the Constitution of 2010. The research demonstrates that several challenges hinder the effectiveness of ICT in schools, including limited accessibility, the absence of an established ICT framework, and high expenses associated with hardware and activities. The deliberate disposal of unused and outdated information and communication technology (ICT) equipment and computers has resulted in the emergence of electronic waste (e-waste) as a significant concern. Furthermore, it has been acknowledged that the proliferation of information and communication technology (ICT) applications has led to various security concerns, encompassing the preservation of framework integrity and the development of applications (Njeru and Wanjau, 2020). The implementation of ICT for administrative and organisational purposes has posed significant challenges for schools in Kenya.

Statement of the Problem

In an optimal educational context, it can be argued that Kenyan schools should have witnessed a significant increase in student enrollment since the implementation of policies such as free primary schooling and funded free day secondary education in 2008 (Sawkins and Kremer, 2010). In light of the increased number of students, it is likely that the administrative system would have undergone developments to integrate advanced tools for data processing and task execution pertaining to student records, staff supervision, financial transactions, scheduling, testing, security protocols, and overall comprehensive management of the school (Sawkins and Kremer, 2013). Ideally, this transformation would have facilitated enhanced productivity by integrating flexible learning and management strategies with cost-effective technology.

Nevertheless, the actuality portrays a contrasting depiction. Boit and Menjo (2018) assert that the successful incorporation of information and communication technology (ICT) into school administration has been impeded by various obstacles. Prominent concerns encompass insufficient information and communication technology (ICT) training for educators and administrators, the lack of dedicated computer hardware tailored for administrative functions, and the limited accessibility or exorbitant expenses associated with administrative software. Consequently, numerous educational institutions, particularly those located in rural areas, persist in their heavy dependence on physical documentation for their administrative procedures. The utilisation of conventional approaches hinders the efficiency of administrative processes and constrains the possible advantages of information and communication technology (ICT) in the realm of school management.

The implementation of information and communication technology (ICT) in public secondary schools within Kiminini sub-county has been experiencing a sluggish rate of progress, primarily attributed to the aforementioned challenges. The insufficiency of knowledge and resources required for the successful implementation of information and communication technology (ICT) in order to enhance the efficiency of school administration has played a significant role in contributing to this particular circumstance. It is imperative to acknowledge and tackle these obstacles while ensuring sufficient training and resources are available. This is essential for optimising the utilisation of information and communication technology (ICT) in the realm of school management. Ultimately, this endeavour will result in more efficient administrative procedures and enhanced educational achievements. The researcher therefore intends to determine influence of use of information communication technology on school administration in public secondary schools in Kiminini Sub-County, Kenya.

Empirical Literature Review

Technology solves human wants. This notion would require educators to actively develop and use technological solutions to address education's many issues. Teachers must be satisfied with their classrooms and constantly improve to maximize student potential and help them integrate into society. Karsenti et al. (2018) found that developing nation classrooms fail to meet the needs of society and students. Esther (2019) examined high school management using ICT apps. ICT is crucial to improving education. ICT in secondary schools is becoming more popular. It simplifies administrative activities like information storage, knowledge management, and decision-making (Usman, 2018). This short study examines the definition, kinds, and use of ICT in educational institutions to improve administrative efficiency. The research shows that administrators adjust and use ICT in their normal administrative work to improve efficiency and efficacy. School administrators should ensure their staff attends frequent in-service training to improve performance. This would improve their ICT skills.

Makewa et al. (2018) examined how rural southern Kenyan secondary school administrators use ICT. The researchers used a descriptive-comparative study to assess educators' views on the importance and scope of using ICT in high school administration. ICT use in high school administration was valued by educators and principals. Administrative staff rated ICT use in student administration and pedagogical monitoring higher. Teachers and administrators have different views on how ICT would affect high school administration. Most importantly, schools must efficiently utilize their resources to give children the best education. Can ICT investments improve education more than other ones? The future security and prosperity of our society depend on secondary school education, thus instructors and students need proper support and resources. The potential of all existing technologies must be considered. Annesley et al. (2018) define educational technology as identifying pedagogical challenges, formulating and refining solutions, implementing them, and assessing their efficacy. The authors believe that instructional technology should be seen as a dynamic process rather than just a tool. Identifying an educational problem is the first step in using instructional technology. They also believe that proposed solutions must be compatible with technological advances and based on widely accepted learning theories. One of the most accepted learning theories is constructivism, which is experimentally supported. The term implies that education occurs in a physical, communal context called an educational setting. The learning environment and constructivism must be examined to create an ICT rationale based on learning and teaching.

According to Drenoyianni (2018), ICT education involves a variety of cognitive skills and aptitudes. These include the ability to analyze, strategize, execute, gather, and retrieve information and organize, administrate, and understand it. Teachers and scholars disagree on the theoretical foundations of secondary education ICT. The curriculum for ICT courses does not explicitly state the skills and talents teachers need to effectively use ICT. With the constant growth, extension, and advancement of software technologies, educators worry about the complexity of curriculum delivery and classroom instruction software. To effectively use information and communication technology (ICT) in education, people must comprehend its principles and capabilities (Karsenti et al., 2018). One of the three main uses of information and communication technology (ICT) in school education is to support instruction, according to Mwencha (2019). This includes using word processors and spreadsheets in numerous subjects. Learning management systems (LMSs) and web-based learning platforms can be used to create a good learning environment. Academically studying ICT involves learning about information and communication technologies. ICT tools for studying are limited in their ability to help students master ICT. ICT education involves learning computer skills. Thus, technical abilities are only developed through ICT education and study.

Mwadulo and Odoyo (2020) examined how Kenyan elementary schools use ICT for learning management. Information and communication technology (ICT), which improves educational standards, has transformed the education sector. School administrators have helped the education industry adopt ICT in recent years. The Kenyan government has taken many steps to promote ICT for school administration change. NEMIS, an ICT plan, and institutional websites are among these measures. Most primary schools use ICT for instruction and learning, but few have successfully adopted it for administration. Slow and insufficient implementation rates plague many educational institutions. ICT drives social progress. This affects all facets of human life. The effects are spreading to schools. Society expects educational institutions to successfully integrate information and communication technology (ICT) because it allows students and educators to customize the learning process, instructional methods, and administrative procedures to meet individual needs. Usman (2018) claims it offers new and better solutions to the nation's educational issues.

Theoretical Framework

The research employed Everett Rogers' (2003) Diffusion of Innovation Theory (DIT) as a theoretical framework. According to Rogers, diffusion can be defined as the sociological process by which individuals within a specific social group adopt a novel idea. According to this theory, the rate at which an innovation is adopted is determined by four primary factors: the features of the innovation itself; the channels via which it is delivered; the timing of its introduction; and the societal structure in which it is introduced. According to Rogers (2003), the spread of new ideas may be understood through the lens of four fundamental hypotheses: the theory of the innovative decision-making process, the theory of personal creative thinking, the theory of the pace of adaptation, and the theory of the distribution of perceived qualities. The idea of the innovation-decision process is based on a sequence of five distinct stages that occur over the course of time. The first step, also known as the "knowledge stage," requires potential consumers of an innovation to become acquainted with the product's existence and gain an understanding of how it functions in order to go on to the "knowledge stage." The subsequent phase in the process of implementing the invention necessitates the task of convincing the targeted users about its inherent benefits. During the concluding stage, individuals are required to make a decision regarding the adoption of the innovation. The fourth stage, known as the application stage, is the phase in which the invention is effectively utilised. Ultimately, it is imperative for users to provide their consent in order to proceed with the adoption of the innovation. After the culmination of these procedures, the recently introduced innovation initiates its dissemination (Chen and Almunawar, 2019).

In order to effectively apply the Diffusion of Innovations theory, it is imperative for educators to possess a comprehensive understanding of the latest technological advancements. It is imperative that educators who possess the necessary qualifications are provided with exposure to information and communication technology (ICT) resources, such as the internet, computers, and relevant software applications. The provision of specialised assistance should be made available. Teachers should be encouraged and prepared to make significant contributions to the implementation process by carefully attending to various context-related aspects. It is imperative that teachers undergo comprehensive training in decision-making, as this will inevitably lead to the emergence of diverse perspectives on innovation. The aforementioned factor influences individuals' perceptions of the utilisation of the invention. Educators evaluate the efficacy of incorporating information and communication technology (ICT) during the implementation phase and subsequently exhibit ongoing dedication to its utilisation.

METHODOLOGY

The research investigation utilised a mixed-methods approach in order to address the research topics at hand. The study utilised a cross-sectional survey approach to collect data on the use of information and communication technology (ICT). The research was centred on the ten secondary schools located within the geographical boundaries of Kiminini Sub-County, Trans-Nzoia County. The study's target audiences consist of 316 teachers and 10 principals.

The study used a purposeful sampling approach. Krejcie and Morgan's (1970) approach guided the systematic determination of the sample size of 169 teachers and 6 principals. Data was collected using various study tools such as teacher questionnaires, principal interview guides, observation guides, and document analysis guides.The collected data was subsequently subjected to analysis employing both descriptive and inferential statistical methods. The process of data analysis was conducted in SPSS (Version 23.0).

FINDINGS AND DISCUSSIONS

Response Rate

Patten (2016) says that a response rate of 60% or more is good in the field of research when filling out a questionnaire. On the other hand, the Pew Research Center found that a response

rate of 50% or higher on a questionnaire is very good, a response rate of 60% to 70% is good, and a response rate of 70% or higher is excellent. The study respondent rate was 162 (92.57%) from a total of 175 (100%) in sample size. this means 13 (7.42%) of the respondents did not participate in this study. Based on what the research found, a response rate of 92.57 percent is enough and even excellent for the analysis.

The Use of ICT on School Administration

Table 1: The Use of ICT on School Administration

	N	Minimum	Maximum	Mean	Std. Deviation
Do you frequently use ICT tools for tasks related to school project	162	1.00	5.00	3.0247	1.51576
How often do you use this ICT tools record keeping, communication, data analysis	162	1.00	5.00	3.1852	1.50454
Do you use any specialized software or applications for school administration	162	1.00	5.00	2.8148	1.47114
Does the use of ICT impact the efficiency of administrative processes in your school	162	1.00	5.00	4.0370	1.19465
Do you received any training or guidance on using ICT for school administration?	162	1.00	5.00	3.6481	1.42066
Valid N (listwise)	162				

Guided by the second objective of the study, the study did a descriptive analysis and found out that, a total mean of 3.0247, with a standard deviation of 1.51576 of the research participants indicated you frequently use ICT tools for tasks related to school project. On the other hand, a mean of 3.1852 with a standard deviation of 1.50454 stated that they often use this ICT tools record keeping, communication, data analysis, while a total mean of 2.8148 with a standard deviation of 1.47114 said that they used some specialized software or applications for school administration. The study analysis continued that a mean of 4.0370 with a standard deviation of 1.19465 of the respondents indicated that ICT impact the efficiency of administrative processes in your school while on the other hand, a total mean of 3.6481 with a standard deviation of 1.42066 of the participants indicated that they received some training or guidance on using ICT for school administration.

Correlations

Table 21: Correlations

		School Administration
Use of ICT	Pearson Correlation	.560[**]
	Sig. (2-tailed)	.000
	N	162

The study found out that there are significant positive relationships between the use of Information and Communication Technology (ICT) and school administration. (r = .560, P-value 0.000).

Discussions

Makewa et al. (2018) looked at how secondary school managers in rural southern Kenya used information and communication technology (ICT) to run their schools. Researchers used a descriptive-comparative study method to see if there was a link between how teachers felt

about the value and range of using information and communication tools in high school management. Teachers and directors both agreed that using ICT to run a high school was important. The managers gave better grades for how ICT was used in school management and teacher supervision. The most important idea is that schools must make good use of their resources to give their students the best education possible. Will investing in ICT have a bigger impact on schooling than investing the same amount in other areas? Secondary school education is important to the long-term health of our society, so teachers and students need all the help they can get. Because of this, it's important to think about what each technology can do. Annesley et al. (2018) say that educational technology is the process of identifying teaching problems, coming up with solutions, putting those solutions to use, and evaluating how well they worked. They say that the full potential of educational technology should be seen as a process, not just as a set of tools to be used in the classroom.

Principal 2:

"The integration of ICT in school administration has brought about noteworthy improvements, particularly in communication between the school, parents, and students. Online platforms have become invaluable tools for sharing announcements, assignments, and progress reports, fostering a more collaborative and informed learning environment. However, challenges such as limited access to reliable electricity persist. To address this, we've invested in backup power solutions to ensure uninterrupted access to ICT tools, but further infrastructure development is necessary. Financial constraints have slowed our progress in fully embracing ICT. In an effort to overcome these limitations, we are actively seeking partnerships with local businesses to secure donations or sponsorships for acquiring computers and software licenses."

Drenoyianni (2018) says that ICT education requires a wide range of new skills and ways of thinking, such as the ability to assess, plan, apply, get, store, and recover information, as well as to arrange, control, and understand it. Educators and experts have different ideas about the academic foundations of ICT in secondary education, and the ICT course syllabus doesn't say what skills teachers need to use it in their lessons. The complexity of the software needed to teach the curriculum and give it in the classroom is another big worry for teachers. This is because software is always being made, expanded, and improved. Karsenti et al. (2018) say that to use ICT in education, you need to understand what it is and what it can do.

Principal 3:

"Our teaching staff's response to ICT adoption has been diverse, with varying levels of comfort and enthusiasm. While some educators have fully embraced ICT and are using digital tools for attendance, grading, and classroom management, others require additional support in adapting to these technological changes. On the administrative front, the integration of ICT has enabled us to centralize tasks and streamline processes, which has been a positive development. Nevertheless, concerns about data privacy and security remain a priority for us. We are in the process of implementing strict security measures to ensure the protection of sensitive student and staff information. The government-led workshops and training sessions have been beneficial in enhancing our staff's ICT skills. However, challenges such as slow internet speeds still impact our ability to fully leverage technology in day-to-day administrative tasks."

Mwencha (2019) says that one of the three traits of ICT in school education is that it is used to help teach, like when word computers and spreadsheets are used in other subjects. ICT services can be used to make a learning setting by providing learning tools like LMSs or web-based learning. Lastly, learning ICT as a field is how people learn about information and communication technology, as well as how to use it. Using ICT tools to study makes it harder

for students to get a full grasp of the ideas and skills they need to understand ICT as a subject. ICT schooling means that you need to know more about how to use and run a computer. So, the only way that computer skills are learned is through teaching and learning ICT as a subject.

Teacher 1:

"The integration of ICT tools has significantly lightened the administrative burden for teachers, allowing us to devote more time and energy to effective classroom instruction. Features such as digital attendance tracking and online gradebooks have streamlined our classroom management processes. Nevertheless, it's important to note that the digital divide between schools is evident. Urban schools tend to have better access to technology, while rural schools face challenges due to limited resources, impacting both teachers and students. Addressing this disparity is crucial to ensure that all students have equal access to the benefits of technology in education. Moreover, while some teachers are embracing ICT wholeheartedly and integrating multimedia elements into their lessons, there are others who could benefit from more training and support to become more comfortable with using technology effectively."

Salome (2020) looked into how information and communication technology (ICT) is used in public secondary schools in Machakos County, Kenya. We looked at both personal and numeric statistics. With the help of SPSS, descriptive statistics were used to look at quantitative data. In the paper, Mwadulo and Odoyo (2020) say that the government should do more to encourage people to use ICT. They also say that schools should buy more computers so that teachers are easier to reach.

Teacher 2:

"The integration of ICT tools in school administration has brought about positive changes, particularly in terms of transparency and communication with parents and guardians. Online platforms have enabled us to keep parents informed about their child's progress and engage them in the learning process more effectively. However, as a teacher, adapting to these new technologies has presented a learning curve. While I appreciate the benefits they offer, access to comprehensive training and ongoing support is crucial to ensure that teachers can effectively integrate these tools into their teaching methods. Additionally, budget limitations have been a hindrance to the full adoption of ICT in some schools. Allocating more resources to provide technology access and training for teachers would greatly enhance our ability to leverage the power of technology to enhance the learning experience for our students."

Technology is used to solve problems related to human wants. If this idea were applied to educational technology, teachers would have to make and use new tools to solve the problems that come up in the classroom. Teachers should be happy with the educational chances they can give their students in the classroom and always try to do better. This will help students reach their full potential and set them up for a good life in society. Several academic writers (Karsenti et al., 2018) say that the educational possibilities in classes in emerging countries are terribly insufficient to meet the needs of both society as a whole and specific people. Esther did a study in 2019 on how ICT apps can be used to run a high school. ICT, which stands for "information and communication technology," is very important for improving schooling. ICT has become more popular in high schools in recent years because it makes managerial tasks like storing information, managing knowledge, and making decisions easier (Usman, 2018).

Conclusions

The research indicates that ICT tools are frequently used for various administrative tasks such as school projects, record-keeping, communication, and data analysis. The effectiveness of

these tools in enhancing administrative efficiency and supporting decision-making processes is evident. However, the use of specialized software or applications appears to be less prevalent among participants, pointing to potential areas for improvement. The recognition of the importance of training and guidance on ICT usage is promising but also highlights the need for continuous support and development.

Recommendations

To promote the wider use of specialized software and applications for school administration, schools should provide targeted training sessions that help educators become proficient in these tools. Institutions should also consider creating a supportive environment that encourages teachers to explore and experiment with new ICT applications in their administrative tasks. Providing practical guidance and examples of successful integration can boost confidence and adoption.

To address challenges and drawbacks related to ICT usage, schools should establish feedback mechanisms that allow teachers to express concerns and provide suggestions for improvement.

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