

PREPAREDNESS TO INTEGRATE ICT IN MANAGEMENT OF PUBLIC SECONDARY SCHOOLS IN NAKURU COUNTY, KENYA

Judith Wamiru Njeru and Catherine Wanjau

Department of Education Management, Policy and Curriculum Studies, Kenyatta University

Corresponding Author Email: jwamiru78@gmail.com

Abstract

Educators and policy makers around the world laud the potential of ICT to enhance the effectiveness and efficiency in the management and administration of education since it can provide quick and critical information that is crucial for decision making. In Kenya, little is known about the preparedness of secondary schools to integrate ICT in management processes. This study thus investigated the readiness of public secondary schools in Nakuru West Sub County to integrate ICTs for institutional management. Descriptive survey research design was employed and the target population was 20 public secondary schools in Nakuru West Sub County, their principals, deputy principals, heads of departments (HoDs), account clerks and secretaries. Systematic sampling technique was used to select 10 schools that participated in the study. To sample the respondents, purposive sampling technique was used to arrive at the following categories: 10 principals; 10 deputy principals; 40 HoDs (four from each school drawn from the departments of languages, mathematics/sciences, humanities and technical subjects); 10 accounts clerks and 10 secretaries. Questionnaires were used to collect data. The instruments validity was established through expert judgment while Cronbach alpha was computed to test their reliability. Data was analysed using the Statistical Package for Social Sciences (SPSS) version-22-computer program. The study established that availability of ICT tools namely: computer hardware, management software and Internet connectivity that are critical for supporting management processes was quite low in schools, and the funds allocated for the same were insignificant. As well, the schools' management and support staff lacked appropriate skills for integrating ICT in management. It thus recommended that the government should allocate more funds to schools for procuring requisite ICTs to support management functions. Also, the current policies on ICT training and capacity building for top management should be reviewed and tailored to equip them with skills for utilization of the ICT tools in all the key school management functions.

Key Words: ICT, Education Management, Preparedness

I. Introduction

Information and Communication Technologies (ICTs) have been found to offer significant support in the management and administration of education through their ability to provide quick and critical information that is crucial for decision making. According to World Bank (2009) ICTs have the abilities to support educational management functions and institutional key processes such as management of human resources; admissions and registration of students, their enrolment as well as achievement monitoring. Ahmad (2011) adds that the use of new technologies in education management can aid school managers to run their institutions efficiently and effectively as well reduce wastages in education that results due to resources misuse and misdirection. He further observes that with the analysis of readily available data, ICTs enable school managers to efficiently make key decisions that may positively influence the institutions growth and functioning. Some of these benefits promised by integration of new technology tools in management could be unachievable where institutions are run purely the traditional manual way. UNESCO (2009) notes that the said potentials of ICTs are fundamental and can help in lowering the cost of education which can in turn encourage access and participation of all students including

those from poor backgrounds as well as help in improving the quality of education offered due to their ability to ease monitoring and supervision of curriculum implementation.

According to Zainally (2008), ICTs have changed the education practice thus allowing information to be transferred, stored, retrieved, and processed by people who work, study or interact with a given institution. Zainally (2008) further notes that there is an increase in managerial effectiveness and efficiency through use of ICTs. Ahmad (2011) argues that ICTs are critical in all aspects of educational management because of their potential of leveraging efficiency and effectiveness in administrative and management functions such as: proper utilization of resources; effective decision making; increasing coordination between departments; planned management; access to the stakeholders; school improvement and development; backing up the students details; enhancing quality education; reducing workload through reduction of manual working and ensuring technology enabled planning and institutional administration.

Ahmad (2011) further explains that ICTs may help improve efficiency of working in the following key areas of educational management: Management of students and their academic achievements: here ICTs can be utilised to support student management processes such as admissions, course enrolments, class attendances, management of fees records and analysis of course assessment and examination performance; Personnel management: ICT can support maintenance of staff personal records and aid in updating their work attendance, leave, transfer and training information. It can also be used in supporting employees' remunerations processes, performance management. ICTs are also invaluable tools in managing the institutions plant management and infrastructural possessions: here ICTs can help maintain accurate details of buildings, facilities available, both hardware and software properties of the institution; Financial Management: ICTs may help in monitoring usage of institutional funds and grants in addition to aiding inventory and procurement management within the institutions.

Kenya ICT policy recognizes the important role that ICTs can perform to enhance institutional management as well as improve the quality of teaching and learning (Republic of Kenya, 2006a). The policy has outlined specific objectives that are directed towards encouraging the utilization of ICTs in education across all the levels of education namely basic, tertiary and university. The Ministry of Education (MoE) on its part in collaboration with the private sector designed a National ICT Strategy for Education and Training that was aimed at making ICT integration possible at all levels. The main objective of the strategy was to outline the way ICT would be adopted and utilized in the education sector so as to counter the perennial issues of education access, quality and equity in Kenya. The plan sought to ensure that systematic efforts are made towards strengthening the adoption and use of ICT in education sector with appropriate attention focusing towards education development priorities (Republic of Kenya, 2006b).

To aid the basic education sector in Kenya fulfil the ICT policy intentions, MoE developed the National Education Management Information System (NEMIS). NEMIS is a web based data management solution that is utilised by the ministry to track the utilisation of educational resources in schools as well as collection of relevant data that is crucial in decision making at the macro level. The main objective of NEMIS is to help streamline data management for informed decision-making and planning of the education sector by hosting student/pupil data, linked to a Unique Identifier that is randomly generated using a verifiable algorithm. Currently, this role of NEMIS

has been crucial for the MoE to make accurate projections particularly in the allocation of free primary and free day secondary monies to specific schools. (MoE, 2018).

In addition, the realisation that education is the natural platform that would help equip the nation with ICT skills which are crucial in supporting dynamic and sustainable economic growth, the government has continued to resource and encourage initiatives for educational institutions to acquire ICTs and requisite skills. For instance, MoE in collaboration with private and public sector has engaged in programmes and activities aimed at providing ICT equipment, content and training of teachers on ICT utilization (RoK, 2012). The country's social, economic and political blue print, Kenya Vision 2030 has also designated a special place for ICT development in education under the allocated investments of science, technology and innovation (STI) (NESC, 2007). This will ultimately have the desired impact on ICT and subsequently to the educational institutions that are expected to benefit in terms of achieving ICT infrastructural development, equipment and capacity building. This will also have a positive effect on the management efficiency of the education sector which is a critical social service in the country and subsequently to the public secondary schools in the country.

As regards other macro and institutional initiatives, Ndirangu and Kabira (2012) observe that the Kenyan government in corroboration with the private sector have implemented key ICT infrastructural projects that are aimed at enhancing easy adoption of ICT in education. These include the Kenya Education Network (KENET) Bandwidth Expansion Project and the laying of the Under Sea Marine Cable System, all of which are aimed at expanding Internet accessibility to the country and to the education sector as well. These authors also note that the heavy investments that the educational institutions are putting in place by procuring the ICTs will gradually be instrumental in supporting their educational processes and functions.

Despite these efforts and initiatives from government and other educational stakeholders, it is not clear how public secondary schools in Kenya have equipped themselves and staff to enable their benefiting from utilization of ICTs to support administration and management functions. This study thus sought to investigate the schools readiness in terms of ICT infrastructure as well as staff attitude towards ICT, their skills and trainings which are critical for appropriate integration of the technologies in management processes.

II. Research Objective

- i. To assess the availability of computer hardware, Internet connectivity and software programs for educational management within the schools
- ii. To establish the preparedness of the schools' principals, deputy principals, HoDs and support staff in terms of attitudes, skills and training for using ICT tools to perform educational management functions

III. Research Question

- i. What is the status of availability of computer hardware, Internet connectivity and software programs for educational management within the schools?
- ii. What is the preparedness of the schools 'principals, deputy principals, HoDs and support staff in terms of attitudes, skills and training for using ICT tools to perform educational management functions?

IV. Literature Review

Preparedness to Integrate ICT in Education in the World

Pelgrum (2001) observes that there has been witnessed an explosion of use of Information and Communication Technologies in the educational field in the past two decades. According to Pelgrum, ICTs adoption in education has largely been influenced by the societies feelings that the new tools will help counter perennial issues that have been associated with education in the world such as out-dated educational systems that have failed to impart in learners the much needed skills for the 21st Century such as thinking and creativity. According to Pelgrum, ICT is now promising to facilitate the acquisition of this skills both efficiently and effectively, and thus every nation of the world is in a hurry to invest in ICTs in their educational systems. Pelgrum also observes that the developing countries have not been left behind and are struggling to reform their educational sectors to be in sync with the new promises of ICTs albeit with minimal successes largely due to the poor conceptions of ICT policies and strategies in education.

The Commission of the European Communities (CEC) (2008) notes that all its members are investing heavily in the implementation of ICTs in their educational systems. According to CEC, member states have started funding ICT projects and initiatives that will help nations acquire progressive ICT policies and robust ICT infrastructure that will see a remodelling of technology integration in education in Europe. These investment programmes are also directing resources in teacher training and capacity building in ICT use as well as supporting the championing of ICT use in education through equipping educational managers with appropriate attitudes and capacities in ICT. CEC notes that the efforts are bearing fruits since schools in Europe are widely adopting ICT in all key functions and processes (CEC, 2008).

Gaible (2008) notes that in the Caribbean nations, ICT infrastructural development in schools is gaining momentum in all the nations and computer use have become a new norm to teachers and learners in education scene. This is as a result of policy goals to see extensive integration of ICT in the education sector by most of the countries. Internet use is also on the rise due to the presence of established telecommunications that are ready to assist education sectors acquire stable Internet cheaply. According to Gaible nations such as Jamaica, Trinidad and Tobago, and Barbados have major technology implementations in process or nearing completion. Gaible however notes that the computers and the Internet have had limited impact on the Caribbean basic education sector educational outcomes. The major impediments to well defined educational benefits from ICTs investment in the Caribbean according to Gaible are low capacities of teachers to use ICTs as well as the curriculum relevance.

In Hong Kong, the government came up with a five year strategic plan on ICT implementation in schools in the late 1998 (Education and Manpower Bureau (EMB,1998). According to EMB (1998) the strategic plan outlines clearly how ICT integration in education will support the acquisition of self-learning capacities in students, abilities to solve problems, as well as seek and analyse information and acquire the critical thinking skills. According to Yuen, Law and Wong (2003) the launch of the above strategic plan in Hong Kong made the education sector experience tremendous growth in ICT efforts and initiatives. The ensuing challenge was thus to find more funds to facilitate demands for ICTs in the sector as well as capacity build educational managers and teachers so as to cope with the spiral effects that were resulting out of the investments of ICT integration in education.

Preparedness to Integrate ICT in Education in Africa

African educational scene has compared poorly with the rest of the world in terms of ICTs investment and integration. The continent educational sector has lagged behind in Internet connectivity as well infrastructure for networking (Infinedo, 2005). This author further indicates that the only regions that have some commendable connectivity are South Africa which has been leading in terms of e-readiness status in Africa and the North Africa which rates better due to its spill over connectivity benefits as a result of being near Europe. Infenedo notes that Africa collectively has been rating poorly in e-readiness statuses in all sectors of the economies when compared with the other regions of the world.

Farrell and Shafika (2007) agrees to the above assertion by Infenedo and posits that the ICT policies in Africa are underdeveloped and totally in variance between countries of the same regions. Farrell and Shafika observe that it is only South Africa that appears to have a well-defined ICT agenda. The countries on the North African regions are favoured by their proximity to Europe and have been able to benefit from high bandwidth connectivity as well as improve their ICT policies and strategies. According to Farrell and Shafika other countries that are making some notable progress in ICT policy frameworks and investment are Mauritius, Ghana, and Botswana largely due to their progressive political leaders. According to this authors most of the countries in Africa have been dealing with internal revolts and conflicts and hence after recently coming out, they are looking up to ICTs as tools that may support their heavily compromised social economic ventures. The two authors however see no hope in some of the countries in the region that are still clouded by conflicts and civil strives thus making them side line investments for ICTs in favour of weaponry.

Concerning schools ICT infrastructural developments, Farrell and Shafika observe that African governments are beginning to show some interest. For instance the Kenyan government has recently launched an ICT policy that promises to enable educational institutions acquire ICT infrastructure and equipment. The ministries of education as well are beginning to establish strategies and initiatives, in collaboration with other stakeholders in education, to see that institutions are acquiring ICTs for supporting educational activities and functions.

Lack of access to reliable electricity is another major issue preventing Africas' quick adoption of ICT in education (UNESCO, 2015). According to UNESCO (2015) most of the schools at the basic level in Africa are not connected to the national grid. This makes it nearly impossible for the benefits of ICT integration in education to be felt in primary and secondary schools in Africa. UNESCO (2015) also notes that other variables such as lack of ICT skills and capacities among educational managers and teachers are affecting the rate at which ICTs are being adopted in the continent. This is notwithstanding the bigger issues of inadequate ICT infrastructure at the macro levels as well as the institutional levels. According to UNESCO (2015), unreliable Internet bandwidth and low network connectivity in schools is making online education transaction impossible in most of the countries, particularly at the basic level.

The development of ICT literacy competencies is well achieved at the basic level particularly in primary and secondary schools. These are the levels in which learners may learn to utilize ICTs to support their cognitive and psychomotor skills as well as acquire appropriate attitudes for the effective use of the tools for learning (Rambousek, Stipek, Prochazks and Wildova, 2014). This

means that, the introduction of ICT in primary and secondary education is the bedrock of learning everything about information technology and its utilisation. Although, few countries in Africa have fully adopted the use of ICT in impacting knowledge in both primary and secondary schools, there is overwhelming opinion that ICT has not been effectively utilized in Africa (Farrell & Shafika, 2007). This is because the level of ICT proficiency among African students is relatively low. Adomi and Kpangban (2010) concur when they argue that a large number of students within the continent barely have any knowledge of using computers. Adomi and Kpangban (2010) further argues that schools in the continent don't seem to provide any meaningful opportunities for learners to develop ICT skills which could come in handy even for self-learning while at home or during school holidays.

Despite putting plans in place for computer literacy in Africa basic education, there are constraining factors which still hinder the implementation of ICT in education. In Algeria, for example, the problem of poor infrastructure and connectivity issues in addition to limited learning materials pose serious challenges to the actualization of ICT based teaching and learning (Asongu & Odhiambo 2019). Oliver (2002) points out the necessity to migrate from the content-centred curricula to competence-based curricula. This movement is closely associated with improving the teacher-centred forms of delivery to student-centred forms (Samarakoon, Christiansen & Munro, 2017). This means that with the introduction of ICT, a rich environment that promotes and motivates learning is ensured. This position is supported by Kisirkoi (2015) who avers that the effective use of ICTs as a teaching and learning agent has been found to significantly increase student's achievement which promotes critical thinking and problem solving skills. Kisirko explains that researchers are in agreement that the use of ICT in education as instructional media does not only enhance learning outcomes but, it is also crucial in preparing the youth for the challenges that come with globalization. More so, with the use of ICTs in schools, students gain the much-needed confidence to embark on meaningful research with their teachers and contemporaries (even with those in other countries) to solve technological problems (Kisirkoi, 2015).

In Africa, the provision of ICT facilities poses a big challenge as many schools lack the bare necessities for an ICT based learning. As Mndzebele (2013) remarks, what has helped schools to have computers are foreign donors and aid from companies that donate ICT facilities as a form of their corporate social responsibility project. With the help of non-governmental organisation and other foreign bodies, ICT have made its grounds in Africa. Mndzebele locates the problem which school in the continent wrestles with within the area of implementation. In an attempt to find a way out of this unpleasant scenario, Rambousek, Stipek, Prochazks and Wildova (2014), propose that computer-based applications for learning such as word processing, be used in place of papers. Furthermore, teaching aids which incorporates slides and projectors should replace the old order of writing boards in the classroom. Also, the prospect of virtual learning was mentioned as a way of not only bridging the gap between students and teachers in different parts of the world but also expanding the scope of learning beyond the walls of a classroom.

As pertaining to teacher professional development, Farrell and Shafika (2007) noted that most countries in Africa lack concrete programmes for integrating ICTs in teacher education. To this end, the authors argue that ICT courses are taught in parallel with the pedagogical courses always with very minimal attempts to integrate the two skills during pre-service training of teachers in

most of the contexts. The in-service training programmes are also poorly conceptualised with little attempts to marry ICT and pedagogical skills. The ICT skills imparted to student teachers and teachers in the field are sometimes an end in themselves and not for supporting their profession of imparting knowledge to their learners.

Preparedness to Integrate ICT in Education in Kenya

Several studies have tried to ascertain the level of adoption of ICT use in Kenyan educational institutions. A study by Kashorda, Waema, Omosa and Kyalo (2007) that assessed the level of preparedness of higher education institutions (HEIs) to use ICT in teaching, learning, research and management found that educational managers in the HEIs were allocating very minimal funds for ICT development in their institutions. As a result, most of the HEIs did not have adequate ICT infrastructural and network developments, equipment, hardware and software for supporting institutional management. This study also found out that the Internet connectivity in the HEIs was poor, lecturers and students' academic activities were difficult to support both online and offline and as well, there was a dearth of institutional computers for academic staff and students to use while in campus.

Another study found out that very few secondary schools in Kenya had sufficient ICT tools for teachers and students use to support E- learning. This particular study established that in situations where investments in ICTs had been attempted, the student-computer ratio was unfavourably standing at 150:1 (Farrell, 2007). The situation was however found to have improved to student-computer ration of 15:1 (Karanja & Abobo, 2014). Karanja and Abobo however found that ICTs hardware, requisite software programmes as well as teachers and administrators ICT skills were still strong impediments to ICT integration in secondary schools teaching/learning and management processes in Kenya.

In addition, Wabuye (2003) found that although ICTs had permeated many sectors of the economy such as communication industry, finance, transport and medical services, the educational system in Kenya seems to lag behind. Wabuye's study noted that the use of computers in Kenyan classrooms was still in its infancy. This study in addition found out that the way teachers and administrators perceived ICT had a significant role in the use of computers in Kenyan classrooms. Additionally, although schools were aware of benefits of using computers, only a few had invested on the ICT tools and only one school had a functional website according to (Kenya School Net, 2003).

In a study to investigate the influence of ICT integration in academic management processes among public universities in Kenya, Karanja, Ndirangu and Sang (2017) found that integration of ICT was having a positive influence. According to the study, students today are able to apply for admissions online, register for their courses of choice, make and track their fee payments and account balances as well as obtain their provisional academic transcripts remotely. In yet another study to investigate the influence of ICT on human resource management in public universities in Kenya, Karanja, Sang and Ndirangu (2018) utilizing a descriptive survey research design established that though ICT integration was perceived by lecturers to have a positive influence on HRM, the influence was markedly on HR administrative functions such as employee's record management and payroll administration. It was however minimal on the more strategic

applications such as staff recruitment and selection, training and development as well as performance management.

It can be established from the literature review above that the higher education sector is dominating in terms of literature on ICT integration. Very few studies particularly on Kenyan context have been found that detail investigations on ICT integration in secondary sector of education, especially as regards to institutional management. Therefore, whereas it is possible to tell from above studies that the higher education is having some improvements as shown by the benefits accruing from investment of ICT in academic as well as human resource management as indicated by Karanja et al. 2017 and 2018, it is quite difficult to tell whether investments in ICT in secondary sector of education are bearing any fruits. This study thus was crucial to indicate the preparedness of secondary schools to integrate ICTs in management processes. The results may offer guidance to other studies that would be interested on the value of the ICT investment in secondary schools, which as shown in the introduction is quite substantial to a developing country like Kenya.

V. Methodology

The study adopted a descriptive survey research design and the target population was 20 public secondary schools in the Sub County, their principals, deputy principals, heads of departments (HoDs), accounts clerks and secretaries. Systematic sampling technique was employed to select 10 schools that participated in the study. To sample the respondents, purposive sampling technique was used to arrive at the following categories: 10 principals; 10 deputy principals; 40 HoDs (four from each school drawn from the departments of languages, mathematics/sciences, humanities and technical subjects); 10 accounts clerks and 10 secretaries, thus resulting to a total study sample size of 80 respondents. Five sets of questionnaires that included: the principal's; deputy principal's; HoD's; accounts clerk's; and secretary's were used to collect data. In order to determine the instruments content validity, the researcher went through them comparing their contents with the study objectives while ensuring that items contained all critical information that addressed the study objectives. The researcher also had the supervisor and other senior members of the Education Management, Policy and Curriculum studies department of Kenyatta University, together with ICT experts at the University discuss the instruments, input their suggestions and approve that they were suitable for collecting the required data. To test the instruments reliability, Cronbach alpha was computed. The items were considered reliable and suitable for collecting data after yielding a reliability coefficient of 0.71 for the management staff questionnaire and 0.78 for support staff questionnaire. These were consistent with a reliability coefficient of 0.70 and above that Gliem and Gliem (2003) recommends for measuring the reliabilities of items in weighted scales. Data was analysed using the Statistical Package for Social Sciences (SPSS) version-22-computer program. Descriptive statistics that included frequencies and percentages were employed to analyse quantitative data on the availability of ICTs and preparedness of staff to utilize them in management. The analysed data was presented using charts and tables.

VI. Findings and Discussion

Availability of Computers, Internet Connectivity and Management Software

The first objective sought to assess the availability of computer hardware, internet connectivity and software programs for educational management within the schools. This data was provided by principals, deputy principals, heads' of departments as well as the secretaries and accounts clerks.

The availability of the ICT components was rated as either high, average or low and the results are summarized in Table 1:

Table 1: Availability of computer hardware, software and Internet in Schools

Sch. Category	Availability of ICT Devices in (%)								
	Computers			Management Software			Internet		
	low	average	high	low	average	high	low	average	high
EC	-	-	100	-	-	100	-	-	100
C	20	5	75	25	20	55	25	10	65
SC	51	5	44	61	2	37	60	12	28
Average	23	3	73	29	7	64	28	7	64

The analysis in Table 1 reveals that computers were the most widely available ICT component since overall, 73% of the respondents said that their availability was high. The availability of management software and internet was equal as they were both rated high in terms of availability by 64% each. Conversely, more respondents rated availability of management software and internet connectivity as low (29% and 28% respectively) than those who rated availability of computers as low (23%).

Table 1 also indicate that the extra county schools led in availability of computers, management software and internet connectivity (100% each). The county schools followed with high availability of 75%, 55% and 65% for the three ICT components respectively. The three components were least available in the sub county schools where the high availability aspect was only noted by 44%, 37% and 28% respondents respectively in relation to the three variables namely: availability of computers, management software and internet connectivity in these schools.

The overall availability of computers, management software and internet connectivity (73%, 64% and 64%) suggests that the availability of the ICT components was high. However when the availability was analysed based on schools categories, a clear disparity in availability was observed. In the extra-county schools, which are the second best category of secondary schools in Kenya, the availability of the three components was 100% each. In the county schools (categorised as third best), the availability dropped to 75%, 55% and 65% respectively. In the sub-county schools (categorised bottom), the availability dropped further to 44%, 37% and 28% respectively meaning that there is minimal investments directed towards ICTs in this category of schools. Considering that sub county schools were the majority (60%) in the sample, this trend reveals that low availability of the ICT components was wide spread in the Sub County.

This finding shows that there is an improvement in the schools ICTs availability status from what Farrell and Shafika (2007) had established. While their study had argued that the student-computer ratio of 150:1 suggested that ICT component was inadequate in many Kenyan schools, the present

study shows that the availability of computers in schools is near adequate since almost three quarters (73%) of the staff sampled rated computer availability in their schools as high. In this respect, this finding corroborates Karanja and Abobo (2014) who pointed out that the student-computer ratio had increased from the 150:1 established by (Farell and Shafika, 2007).

Bearing in mind the direct influence of availability of financial resources and availability of the ICT components, the study went further to ascertain whether the schools had availed the financial resources to procure the ICT components. This data was provided by the management staff namely principals, deputy principals and heads of departments. The percentage of management staff in each cadre of respective school category who said their schools had availed or not availed the financial resources is summarised in Figure 1:

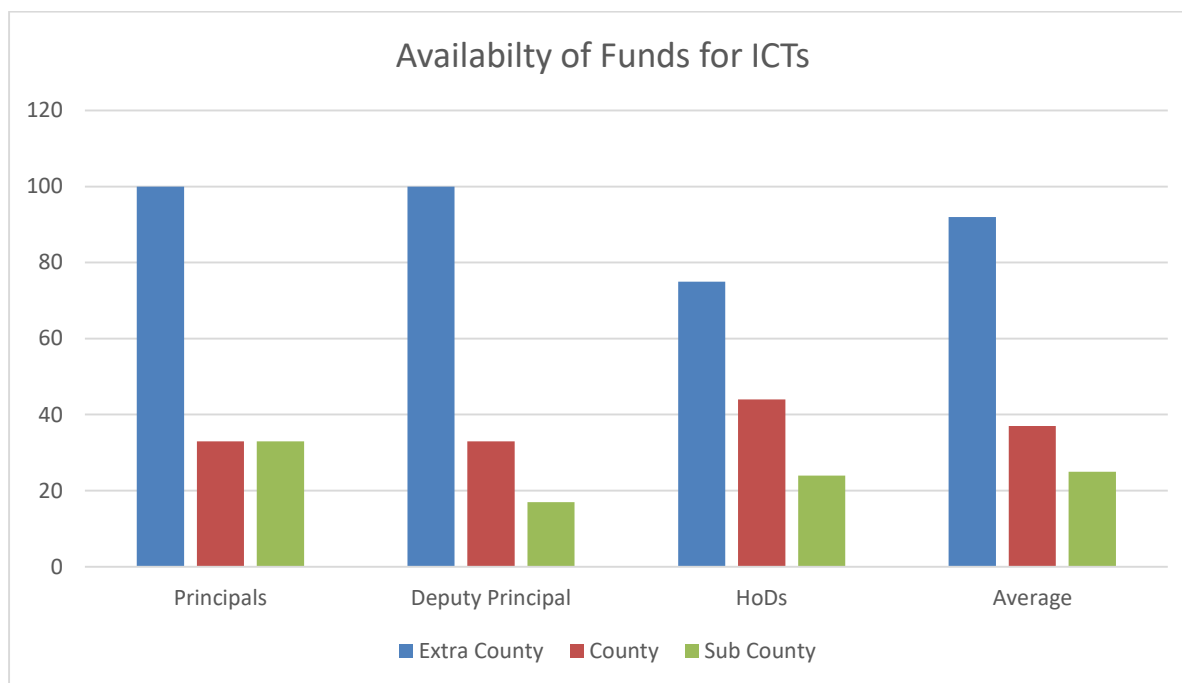


Figure 1: Availability of resources to finance ICT according to management staff

Figure 1 shows that all principals of extra county schools (100%) noted that their schools had allocated funds for ICTs while those of county and sub county schools both responded similarly at (33%) about the same aspect. The figure also indicates that all the deputy principals of extra county schools (100) agreed with their principals about the availability of funds for ICTs in their schools. Similarly, the deputies of county schools corroborated what their principals had said about the same aspects with the same percentage (33%) while those of sub county schools showed the lowest response to the question at 17%. The HoDs of extra county schools seemed to agree with their principals and deputy principals at 75%, those of county schools responded at 44% on the same question while HoDs from sub county schools responded at 24% on availability of funds allocation for ICTs. On average, Figure 1 indicates that extra county schools had the highest number of respondents (92%) who said their school had set aside financial resources for ICT. This was followed by county schools at 37% while sub county schools had the least financial resources allocated for ICTs, as reported by only 25% of the respondents in this category of schools.

Kashorda, Waema, Omosa and Kyalo, (2007) substantiates the findings that most of the institutions, as indicated by county and sub county categories of schools, are ill prepared to utilise ICT for institutional management. Kashorda et al. (2007) add that the institutions authorities allocate minimal resources to the development of ICT. Likewise, these authors note that the institutions are characterized with inadequate bandwidth, low access to networked personal computers by staff and students, low quality of campus network infrastructure and limited campus access to library resources.

Mndzebele (2013) also explains that in Africa, the provision of ICT facilities poses a big challenge as many schools lack the bare necessities for an ICT based learning and management. Mndzebele further posits that what has helped schools to have computers are foreign donors and aid from companies that donate ICT facilities as a form of their corporate social responsibility project. With the help of non-governmental organisation and other foreign bodies, ICT have made its grounds in Africa. The problem according to Mndzebele which schools in the continent continue to wrestles with, is within the area of implementation due to lack of technical knowhow by implementers, skills for users, and funds for ICTs maintenance and sustainability.

Respondents Attitudes, Skills and Training for Using ICT in Educational Management

The second objective sought to establish the preparedness of the schools' principals, deputies, HoDs and support staff in terms of attitudes, skills and training for using ICT tools to perform educational management functions.

Attitude of management and support staff towards ICT use

The study firstly investigated whether the management and support staff possessed appropriate attitude to utilize ICT tools in educational management. Attitude towards ICT use was twofold: like or dislike. To determine these attitudes, the staff were required to agree or disagree with statements that reflected acceptance of ICT or resistance to ICT. Consequently, the two choices reflected like or dislike of ICT use respectively. To begin with, the set of questions were posed to the management staff and the results are as summarized in Table 2:

Table 2: Attitude of management staff towards ICT use

Statements that gauge attitude of the staff	Number of respondents %		
	Agree	Disagree	Undecided
ICT makes work easy in the school	96	0	4
Manual systems work better than ICT	11	89	0
ICT is a burden to the school	08	89	3
ICT is a threat to job opportunities	13	86	1
ICT requires constant staff retraining	27	60	13

Table 2 indicate that most of the staff in management positions agreed that ICT makes work easy in their schools (96). Most respondents also showed opposition to the statements which indicated dislike of ICTs such as: manual systems work better than ICT (89%); ICT is a burden to the school

(89%); ICT is a threat to job opportunities (86%); and ICT requires constant staff retraining (60%). Results in Table 2 thus imply that the schools management staff were in full support of ICTs and what they can achieve in management functions of their schools. The finding is consistent with Albirini (2006) who noted that functionality attributes of the ICT equipment significantly influenced the teachers' attitudes towards their use. Thus, when teachers feel that ICT is beneficial, they see it as compatible with their work related activities and hence they are likely to demonstrate positive attitudes towards ICT. The study as well investigated the attitudes of the support staff towards ICT use in management and the results are as summarised in Table 3:

Table 3: Attitude of support staff towards ICT use

Statements that gauge attitude of the staff	Number of respondents %		
	Agree	Disagree	Undecided
ICT makes work easy in the school	100	0	0
Manual systems work better than ICT	04	91	05
ICT is a burden to the school	10	90	0
ICT is a threat to job opportunities	04	92	04
ICT requires constant staff retraining	20	73	07

According to Table 3 all the support staff noted that ICT makes work easy in their schools (100). Most of them also showed opposition to the statements which indicated dislike of ICTs such as: manual systems work better than ICT (91%); ICT is a burden to the school (90%); ICT is a threat to job opportunities (92%); and ICT requires constant staff retraining (73%). This results thus imply that the support staff, just like their counter part in management positions had a positive attitude towards ICTs and what they can achieve in management functions of their schools.

Management and support staffs' proficiency in ICT tools

Having established that majority of the management and their support staff supported ICT use, the present study went further to assess whether the two groups possessed the relevant ICT skills needed to use the ICT tools. In this regard, the respondents stated their proficiency level in the use of MS Word, MS Excel, MS Power Point and the Internet. The proficiency was rated as either good (G), fair (F) or poor (P). This information is summarized in Table 4:

Table 4: Management and support staffs' proficiency in ICT tools

Program	Staff ICT Proficiencies in (%)														
	P			D.P			HoDs			AC			Sec		
	G	F	P	G	F	P	G	F	P	G	F	P	G	F	P
Word	50	40	10	60	40	0	68	29	3	89	11	0	100	0	0
Excel	20	80	0	30	70	0	38	44	18	89	11	0	88	12	0
P point	30	60	10	40	50	10	29	44	26	44	56	0	75	25	0
Internet	40	60	0	70	30	0	65	29	6	78	22	0	100	0	0
Average	35	60	5	50	48	2	50	37	13	75	25	0	91	9	0

Results on Table 4 shows that the secretaries displayed the overall highest proficiency in the use of all the ICT tools that are commonly used in management since 91% of them rated themselves as being good in ICT proficiency and 9% as being fair. They were followed by accounts clerks since 75% of them rated themselves as having good proficiency while only 25% rated themselves as having fair proficiency. The HoDs came third with 50% rating themselves as being good and 37% rating fair in ICT proficiency. The deputy principals were fourth considering that 50% attained a good proficiency rating and 48% fair. The principals displayed the lowest proficiency with only 35% of them rating good while 60% rated fair. This findings imply that secretaries in the schools are well equipped with ICT skills required in supporting management functions in the schools. This could largely be attributed to their pre-training skills to ICT as indicted in Table 5. The principals rated lowest in ICT proficiency which could be attributed to their dependability of the school secretaries to execute functions that relate to ICT in management as well as their low skills attainment as also indicated in Table 5.

Respondents Pre-service and in-service training on ICT use in management

In addition, the study investigated whether the management and support staff had undergone pre-service or in-service training on ICT use in management, the duration of training and the ICT aspects learned. This information is presented in table 5:

Table 5: Training of the management and support staff on ICT use

Designation	Duration of training in ICT management											
	Pre-service training (No. in %)						In-service training (No. in %)					
	1mth	3mths	4mths	6mths	Total		2wks	2mths	3mths	4mths	5mths	Total
P	10	20	0	0	30		20	30	0	0	10	60
DP	10	0	0	0	10		20	20	0	10	0	50
HoDs	12	9	0	6	26		12	12	3	3	0	29
AC	0	0	0	11	11		33	11	11	0	0	56
Sec	13	13	25	38	88		13	13	0	0	13	38
Average	9	8	5	11	33		20	17	3	3	5	47

Table 5 shows that overall 47% of the management and support staff had undergone in-service training on use of ICT in educational management while 33% had undergone pre-service training. The pre-service training had the highest attendance rate among the secretaries (88%) and the least attendance rate among the heads of departments (10%). On the other hand, in-service training had the highest attendance rate among the principals (60%) while it had the least attendance rate among the heads of departments (29%). These trainings among the school principals had generally improved the acceptability of ICT as shown earlier on Table 2. According to Kenya Report (2005) the ICT skills of the school manager are a major success factor in adoption of ICT in learning institutions. In a Kenya Report study, cases where the Manager had ICT skills or had a keen interest, a trickle-down effect was observed. This was evident at Uthiru Girls where the School Principal has a Higher National Diploma in IT and at Green Garden School where the school director has a lot of interest in e-learning and has even attended the past three international conferences organized by e-learning Africa.

Aspects of ICT management respondents were trained in

In order to ascertain the preparedness of the staff to use educational management tools, the study went further to enquire about the aspects of ICT management that different levels of the management staff had been trained on. This data is summarized in Table 6:

Table 6: ICT aspects trained on by management and support staff

Aspects learned	P	D.P	HoDs	AC	Sec	Average
Computer operating system	50	40	56	31	38	43
ICT integration in management	20	20	6	0	38	17
ICT for financial management	10	10	16	33	25	17
Security in ICT	10	10	0	0	0	4

The analysis in Table 6 above reveals that overall, computer operating systems was pursued by 43% of the management and support staff making it the most popular aspect of training. This aspect was more preferred by management staff led by the HOD at 56% followed by principals at 50% and deputy principals at 40%. This may be attributed to the fact that most of the universities today are training student teachers in computer application. As well, the Kenya Education Management Institute (KEMI) has been training school managers and support staff in ICT for Education Management, where computer applications skills such as word processing, excel sheets, PowerPoint preparation and presentation, use of emails for organizational communication are also trained (Karanja & Abobo, 2014).

Results in Table 6 also show that ICT integration in management and ICT for financial management came second in term of overall preference at 17% each. These aspects received more preference among the secretaries and accounts clerks at 38% and 33% respectively. The preferences by the support staff is definitely due to the ease of which applications such as word and excel has made in documentation and accounts respectively. Their pre-training also incorporates ICT applications in their courses. ICT integration courses in education are also promoted and organized for school managers and their support staff as noted above by Karanja and Abobo (2014).

Results of Table 6 shows that pre-service and in-service trainings attended by the managers and support staff has resulted in the confidence and acceptability of ICT application in management functions of the schools as earlier indicated in Table 2 and 3 respectively. When school managers and support staff have self confidence in integration of ICT they will try to use them in their work and other related duties irrespective of the preparedness that exist in the schools. Such staff are motivated to look for solutions to problems facing the ICT integration as they deem it an important tool for teaching, learning and management with a number of advantages, and that it makes their work easier hence increased ICT integration in schools (Afshari et al. 2009; Bauer and Kenton, 2005).

VII. Conclusion

Firstly, the present study concludes that while availability of ICT tools namely: computer hardware, management software and Internet connectivity was generally high in the extra county and county schools, their distributions in sub-county secondary schools which incidentally are the majority in Kenya was quite low. Funds allocated to ICTs in sub county schools were equally insignificant for any meaningful investment in the tools for supporting management to be realised.

Secondly, although the management and support staff were found to be having high positive attitudes towards ICT integration in management, their skills preparedness for the same was low. The management and support staff were generally below average in computer operating skills and very low in ICT integration skills in general management, ICT support skills in financial management and ICT security skills.

VIII. Recommendations

Firstly, the study recommends that the government should allocate more funding to particularly the sub county secondary schools which are the most constrained, as well as all the others, so that the schools may afford to procure computer hardware, management software, and Internet connectivity which are critical in supporting management functions in the schools and also for the investments sustainability. Such funding will address the initial high cost of ICT infrastructure as well as the recurrent cost of maintenance and operations like hardware servicing, acquisition of requisite and updated software, printing and data.

Secondly, the study recommends that the current policies on ICT training and capacity building especially for top management staff like principals and their deputies should be adequately reviewed. Such training should be tailored to equip the managers with appropriate computer operating skills as well as for utilization of the ICTs in all the key management functions. This means that ideally the principals will be able to support other members of staff in their schools and also play a leading role in utilization of ICT to support management processes in respective schools.

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