

The Influence Of Community Related Factors On ICT Integration In Management Of Public Secondary Schools In Kitui County, Kenya

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Abstract: The purpose of this study was to investigate the influence of community related factors in the integration of information and communication technology in the management of public secondary schools in Kitui County, Kenya. A descriptive survey research design and mixed method approach were used in this study. The study was carried out in 58 public secondary schools in Kitui County that have functional ICT infrastructure. This study used sample size table as proposed by Krejcie and Morgan (1970) and Peter (2005) whereby 58 principals, 58 senior teachers and 266 assistant teachers from schools that have functional ICT infrastructure were selected. All 16 Sub-county Directors of Education and one County Director of Education were selected for the study. The researcher used questionnaires to collect data from principals, senior teachers and assistant teachers while interview schedule was used to collect data from Sub-county Directors and the County Director of Education in Kitui County. The collected data was analyzed using both quantitative and qualitative data analysis approaches whereby both descriptive and inferential statistics were used. The findings of the study indicated that the government was the major source of the computers that were in schools. The study revealed that (48% and 44%) of the senior teachers and principals had received 11 to 15 computers respectively from the government. Majority (67.2%) of the respondents pointed out that the community supported more on security. Results from chi-square test also shows that there is a significant association ($\chi^2 (1, 4) = 49.444, p < 0.05$) between community support and ICT integration. Results from chi-square test also indicate that there is a significant association ($\chi^2 (1, 4) = 50.411, p < 0.05$) between school security and ICT integration.

Keywords: Information and Communication Technology, Public secondary schools, Community Related Factors.

I. INTRODUCTION

Aboderin (2004) defines ICT as the broad field of information and communications by means of computer and telecommunication; tools that are being increasingly used for organization or personal information processing in all sectors of economy and the society as a whole. The study of information technology implementation in organizations and institutions began around 1950s (Clark & Meyor, 2003). These researchers argue that the potential of Information Communications Technology (ICT) to enhance human capabilities and revolutionize the management of organizations was first realized in other sectors of society, mostly in the business world, engineering and the military,

other than in education. The importance of ICT contribution is also widely recognized both in the workplace and at home (Maki 2005). ICT is therefore becoming a vital enabling tool that can no longer be ignored in the management of schools.

The importance of ICT in the educational management is quite evident worldwide and especially in Europe and United States of America (Empirica, 2006). Information and Communication Technology was first used in educational institutions in North America and Europe in 1970s. In these Countries, computers are used to enable successful learning in e-learning and to provide professional development for multiple staff in a learning institution and school management systems (SMS), enabling them to be more effective. The Economic Commission for Africa has indicated that the ability

to access and use information is no longer a luxury but a necessity for development. Gray and Smith (2007) observe that the twenty first century school managers are faced with numerous challenges emanating from ICT integration. Attitude issues as well as lack of ICT competence may affect ICT integration in schools. Uwadia (2009) emphasizes that ICT serves as a tool for increased productivity and effective decision making. For instance, the knowledge of ICT can be explored by the secondary school managers to ensure effective delivery of services, enhanced communication, proper maintenance of students' record system and maintaining academic planning among others. He further observes that in the school system today, it seems impossible to ignore the place of ICT hence school managers are faced with the challenge of incorporating ICT into the management of schools in meaningful and productive ways.

II. COMMUNITY BASED FACTORS AND ICT INTEGRATION IN MANAGEMENT OF SCHOOLS

Computers require highly skilled support and technical maintenance to operate yet most schools only budget for purchase costs. Total Cost Ownership (TCO) requires a good amount of funds to hire ICT technicians for maintenance and technical support and infrastructure development yet such funds are usually excluded from the budget. There is also the need to ensure that there is adequate security in the school premises for the safety of the expensive ICT facility hence the need to consider community factors (Bissell, 2006).

III. COMMUNITY SUPPORT AND ICT INTEGRATION IN SCHOOL MANAGEMENT

Richardson (2008) reports that the American Assistance for Cambodia funded internet connections to rural schools and in collaboration with Japan Relief for Cambodia solicited funds and constructed schools, installed solar panels and internet connectivity. Cambodia now competes favourably with other developing countries in terms of ICT access and use in secondary schools. A paper by Samuel and Zaitun (2007) explores the available ICT resources and the level of IT skills of English language teachers in Malaysian schools. This paper is based on the findings of a questionnaire survey conducted over a period of five months. The paper indicates that MoE in Malaysia facilitated capacity building for administrators, teachers and other school managers from rural areas in ICT to enhance literacy levels and match the continuously introduced software and hardware in the market.

According to Hennessey, Onguko, Harrison, Ong'ondi, Namalefe's & Naseem, (2010) Partnership contribution in Benin and Uganda enabled schools acquire computers through Non-Governmental Organizations (NGOs), donor programs and projects such as Microsoft Partners in learning program, cyber school technology solutions, New Partnership in African Development (NEPAD), Uganda connect program and computer for schools program. Katulo (2009) carried out a case study in Namibia which explored the role of school principals in promoting and managing computer usage in

selected schools in Namibia. The study was conducted at four schools in the Caprivi Region. The study employed a qualitative case study to collect and analyze data. A total of four school principals and four computer coordinators were interviewed, and responded to questions pertaining to the role of the school principals in promoting and managing computer usage in selected schools in Namibia. Two focus group interviews were also conducted at two schools, to find out what they perceived to be the role of school principals in supporting and ensuring the effective use of computers in schools. The results of the study points out that the Ministry of Education (MoE) through the National Educational Technology Service and Support (NETSS) centre supported schools through free technical support services.

Ayere, Odera and Agak (2010) in a comparative study in Kenya reveal that through UNESCO, NEPAD and Computer for Schools Kenya (CFSK) national schools obtained computers besides training of teachers and principals at in-service level. Since there were few national schools in the country, majority of schools did not benefit from this pilot program. Farrel (2007) survey findings report that Non-Governmental Organizations (NGOs) and donors in partnership with the MoE have variously contributed computers to schools. Kukali (2013) confirms that most of the special schools in Bungoma County, Kenya, acquired computers and other school infrastructure through the MoE, Constituency Development Funds (CDF) and international donors. It is evident that despite the fact that there are several opportunities that schools could depend on for ICT use and integration in management, schools are on the contrary faced with similar magnitude of challenges as far as ICT integration is concerned.

Oloo (2009) carried out a baseline survey which covered 56 schools in seven out of the eight provinces in Kenya, in order to determine the current use and attitude towards ICTs in schools in the seven provinces. This survey employed a mix of both qualitative and quantitative techniques of data collection. Questionnaires were used to collect data from 52 public secondary schools, two primary schools and two technical training colleges. Data was analyzed using tables, graphs and charts. According to the study findings, 16.07% of schools received computers through PTA projects, 17.86% CFSK, 7% through individual donations while 54% through school funds.

IV. SCHOOL SECURITY AND ICT INTEGRATION IN SCHOOL MANAGEMENT

The security of school premises is, however, clearly an important part of ensuring the personal safety of staff, pupils and visitors (Bissell, 2006). It is therefore highly relevant to a school's overall health and safety policy. The report notes that modern schools contain many expensive items, including computers, musical instruments, TVs, video recorders and cameras. These equipment need to be protected against theft. Paying for crime means using money intended for other purposes such as maintenance, new equipment or more staff. Appropriate security measures should be taken by the school management and the community at large to protect school property. According to Rusten and Hudson (2013), the high

cost of investing in technology in public schools often can be justified partly by allowing the new computer facilities to be used by members of the school community. If this is a priority, then the community will highly support and provide the necessary security for the ICT infrastructure.

The physical security of the schools and the classrooms in which computers may be installed will highly be determined by the schools' location. Providing sufficient security in the classroom and at the school to prevent theft of equipment, software, and supplies can be expensive and it is often only possible for one or two rooms in a school (Bartlett, Akala, Semyalo & Stafford 2013). When security plans are made, it is important to achieve a balance between protecting equipment from theft and allowing easy access to computers as often as possible. Fears of being blamed for damage to or loss of equipment can cause principals and teachers to make it very difficult for students to use computers, or for community members to benefit from investments in technology through after-school use. School leadership concern over computer security can therefore be detrimental to teacher and student access. In some schools, the computers are stored and not turned on for quite a while.

Gakuu and Kidombo (2010) carried out a study on institutional management and integration of Information and Communication Technology in teaching and learning in selected Kenyan schools. Ten principals of selected schools and one teachers' training college from Nairobi and its environs were interviewed. A mixed methods approach was used. Interviews, focus group discussions audiotapes of discussions, videotaped classroom observations and photographs of school environments, review of school documents on ICT and teacher and student productions were used to collect data. Data was analysed by use of percentages and graphs.

The results of this study reveal that out of the ten schools studied, five schools had ICT integration and maintenance and renewal plans. The schools were also asked if they provide ICT services to the community. Only two out of ten schools did so. One mixed high school indicated they host a Cisco Centre which offers training to the school community as well as the community around the school. Another one indicated they offer typing and photocopy services to the community around the institution. Two schools said that they do not provide access to its ICT infrastructure to the community because the computers are few. Another one reported that the school does not provide any access to the community due to security reasons. According to the ICT advisor, the school has suffered several burglary attempts and therefore, the school management became hesitant to let the community use their computers. There is also fear of attacks by viruses that can render all the computers useless, this is especially serious as the school does not have internet connectivity to update anti-virus software to screen and clean the viruses. It appears, therefore, that apart from the few facilities, the fear of theft and viruses is a major reason for not sharing the computers with the community. Kersaint (2006) argues that insecurity is one of the problems that prevent school establishments from equipping themselves with computers.

V. PURPOSE OF THE STUDY

The purpose of this study was to investigate the influence of community related factors on ICT integration in the management of public secondary schools in Kitui County, Kenya. Specifically the study is to: Establish the influence of community support on ICT integration in the management of public secondary schools and to determine the influence of school security on the integration of ICT in the management of public secondary schools in Kitui County, Kenya.

VI. METHODOLOGY

This study adopted descriptive survey research design. According to Mugenda (2011) descriptive survey design is useful in describing the characteristics of a large population, makes use of large samples, thus making the results statistically significant even when analyzing multiple variables, many questions can be asked about a given topic giving considerable flexibility to the analysis. The researcher also used mixed approach method whereby both qualitative and quantitative data was collected. According to Kothari (2011), qualitative methods provide greater depth of understanding about a limited number of subjects, while quantitative methods give a less in-depth understanding, but cover a wider scope of subjects. Using mixed approach gives a more powerful research (Guba & Lincoln (2005). Therefore, a complementary mixture of quantitative and qualitative data was sought in the methods used where the strengths of each approach was fully utilized.

This study targeted only schools which have functional ICT infrastructure. According to reports at the Kitui County Education Office, only 58 public secondary schools in the County had functional ICT infrastructure (Kitui County Education office, August, 2015). The target population for this study was therefore the 58 public secondary schools principals, 58 senior teachers, and 870 assistant teachers, 16 Sub-county Directors of Education in the 16 Sub-counties and one County Director of Education in Kitui County. This study used sample size table as proposed by Krejcie and Morgan (1970) and Peter (2005). The study sampled 58 principals, 58 senior teachers and 266 assistant teachers from 58 public secondary Schools in Kitui County that have functioning ICT infrastructure. All the 16 Sub-county Directors of Education and the County Director of Education were sampled for the study. The study used questionnaires and the interview schedule as tools for data collection. The questionnaires were administered to principals and teachers while interview schedules were administered to the Sub-county Directors of Education and the County Director of Education.

VII. FINDINGS OF THE STUDY

In order to establish the influence of community related factors on ICT integration in the management of public secondary schools in Kitui County, questionnaires were administered to 58 principals 58 senior teachers and 266 assistant teachers. The interview guide was used to collect

data from 16 Sub-county Directors of Education and one County Director of Education. The data was then analyzed on the basis of these questionnaires and interview guides.

VIII. COMMUNITY SUPPORT AND ICT INTEGRATION IN MANAGEMENT OF PUBLIC SECONDARY SCHOOLS

The first objective for this study was to determine the influence of community support on the integration of ICT in management of public secondary schools. The principals were requested to indicate the major sources of their computers. The results were presented in Table 1

Source	Principals		Senior Teachers	
	Frequency	%	Frequency	%
Parents	10	20.0	12	24.0
Community	3	6.0	2	4.0
Government	26	52.0	25	50.0
Donations	11	22	11	22.0
Total	50	100.0	50	100

Table 1: Major Sources of computers for schools

From Table 1, we can note that majority (52% and 50%) of the principals and senior teachers respectively indicated that the government was the major source of the computers. Other sources included; donations (22%), parents (20%) and community (6%) as per the principals.

The teachers were also requested to indicate how the community supported ICT integration in schools. The responses were presented in Table 2.

	Frequency	Frequency	%
Donations		56	22.4
Security		168	67.2
Advice		6	2.4
Total		250	100

Table 2: Teachers Responses on Community Support on ICT

Table 2 shows that majority (67.2%) of the respondents point out that the community supported more on security. However there were a few donations given by the community.

The respondents were requested to indicate the number of computers received from their major source. The results are as shown in table 3.

Number of computers	Principals		Senior Teachers	
	Frequency	%	Frequency	%
Less 5	0	0.0	0	0.0
5 – 10	18	36.0	15	30.0
11 – 15	22	44.0	24	48.0
16 – 20	5	10.0	5	10.0
Above 20	5	10.0	4	8.0
Total	50	100.0	50	100

Table 3: Number of Computers Received from the Major Source

It can be observed from Table 3 that majority (48% and 44%) of the senior teachers and principals had received 11 to 15 computers from their major source. This was followed by those who had received 5 to 10 (36%).

IX. SCHOOL SECURITY AND ICT INTEGRATION IN MANAGEMENT OF PUBLIC SECONDARY SCHOOLS

To establish the influence of school security on ICT integration in management of public secondary schools the respondents were requested to indicate the extent to which the neighbourhood security influences ICT integration. The results were presented in Table 4 below.

Extent	Principal's		Senior Teacher		Assistant teacher	
	Frequency	%	Frequency	%	Frequency	%
Great extent	12	24	13	26	115	46
Moderate extent	29	58	26	52	95	38
No extent	36	12	7	14	32	13
Undecided	3	6	4	8	8	3
Total	80	100.0	50	100.0	250	100.0

Table 4: Extent to which the Neighborhood security influences ICT integration

Table 4 shows that majority (58% and 52%) of the principals and senior teachers respectively indicate that the neighbourhood security influences ICT integration to a moderate extent while 46% of the teachers' responses show that neighbourhood security influence ICT integration to a great extent.

The researcher further used Chi-square to test the hypothesis below;

H₀₁: There is no statistically significant association between community support and ICT integration in the management of public secondary schools in Kitui County, Kenya.

H₀₂: There is no statistically significant association between school security and ICT integration in management of public secondary schools in Kitui County, Kenya.

The results were presented in Table 5 and 6.

	Value	Df	Asymp. Sig. (2 sided)
Pearson Chi-Square	49.444 ^a	4	.001
Likelihood Ratio	6.64	4	.003
Linear-by-Linear Association	15.32	1	.000
N of Valid Cases	50		

a. 8 cells (75.0%) have expected count less than 5. The minimum expected count is 0.05. 0.05 sig. level.

Table 5: Chi-square tests for association between community support and ICT integration

Table 5 shows that there is a significant association ($\chi^2(1, 4) = 49.444, p < 0.05$) between community support and ICT integration. The hypothesis is therefore rejected while the alternative hypothesis is adopted that, there is a statistically significant association between community support and ICT integration in the management of public secondary schools. From the interview schedule, the County Director and Sub-county directors of Education reported that the major source of computers for schools was the government through a programme known as computers for schools. However these

computers are not enough and therefore the parents, donors and the community should also assist schools to acquire more computers.

	Value	Df	Asymp. Sig. (2-sided)
Pearson Chi-Square	50.411 ^a	4	.000
Likelihood Ratio	7.6	4	.000
Linear-by-Linear Association	16.3	1	.000
N of Valid Cases	50		

a. 8 cells (75.0%) have expected count less than 5. The minimum expected count is .05 at 0.05 sig. level.

Table 6: Chi-Square Tests For Association Between School Security And Ict Integration

Table 6 shows that there is a significant association ($\chi^2(1, 4) = 50.411, p < 0.05$) between school security and ICT integration. This hypothesis is therefore rejected while the alternative hypothesis is adopted that; there is a statistically significant association between school security and ICT integration in the management of public secondary schools. It appears, therefore that security of ICT infrastructure is a major concern in schools.

X. CONCLUSIONS

From the findings of this study it was established that the government was the major source of the computers that were in schools. This is as indicated by majority (52 and 50%) of the principals and senior teachers respectively. It was indicated that (48% and 44%) of the senior teachers and principals had received 11 to 15 computers from the government. Other sources included; donations (22%), parents (20%) and community (6%) as per the principals. Majority (67.2%) of the respondents point out that the community supported more on security. However there were a few donations given by the community. Results from chi-square test also shows that there is a significant association ($\chi^2(1, 4) = 49.444, p < 0.05$) between community support and ICT integration.

The study also established that the neighbourhood security influences ICT integration to a moderate extent as indicated by (58% and 52%) of the principals and senior teachers respectively while 46% of the assistant teachers' responses show that neighbourhood security influence ICT integration to a great extent. Results from chi-square test also indicate that there is a significant association ($\chi^2(1, 4) = 50.411, p < 0.05$) between school security and ICT integration. From the interview schedule the County Director and Sub-county Directors of education indicated that school security influence ICT integration in management of schools in that in areas that are prone to insecurity there has been few cases of computer theft in schools.

XI. RECOMMENDATIONS

Based on the study finding, the following recommendations were made;

- ✓ The government should increase its supply of computers to schools and make it compulsory for all schools to integrate ICT in the management tasks as well as build computer laboratories to all the schools. This will enable most schools to acquire computers which can be used for ICT integration in management of the schools.
 - ✓ The Ministry of Education should formulate a policy requiring every public secondary school teacher to procure and own a laptop through a government incentive such as subsidy, tax waiver or creation of an affordable laptop loan scheme.
- All the schools should have internet connectivity to enable principals and teachers to use ICT in the schools. This would help in communication as well as academic research. The schools should also have alternative source of power in places where there is no electricity so as to enable effective ICT integration in school management.

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