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# Principals' Involvement of Stakeholders in Integration of Information Communication Technology in Public Secondary Schools Management in Bungoma County, Kenya

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**ABSTRACT:** The onset of Information Communication Technology (ICT) has earned great recognition as a global tool for preeminent management practices. The Kenya government through National ICT policy and strategy advocated for ICT integration in schools' management and enhanced prominence through partnerships with development agencies and private organizations. Despite government efforts, progress in integration of ICT in Public Secondary Schools Management (PSSM) in Bungoma County has been short of expectation. This study sought to establish principals' involvement of stakeholders in integration of ICT in PSSM in Bungoma County. Descriptive research design was adopted. The study population consisted of 272 principals and 82 principals selected through simple random sampling technique. Interviews and questionnaires were used for data collection. Both quantitative and qualitative data were analyzed and reported descriptively in percentages and means. The findings demonstrated evidence of ICT integration in director of studies office with an Average Mean Rating (AMR=3.65), Somewhat in principals' office (AMR=2.76) while Deputy principals' and class teachers' offices at (AMR=2.55). Major findings indicated that 86.59% of principals depended on Parents Teachers Association projects, 84.15% on School Funds while 79.27% on School Income Generating Activities for financial support. While there was integration, principals involved stakeholders variously in soliciting financial support.

***KEYWORDS:*** *ICT, Integration, Management, Schools, Secondary, Public*

## I. INTRODUCTION

The introduction of Information Communication Technology (ICT) has come a long way on the global scene to individual countries in morphing from theory to practice. In diverse form of ICT, Carnoy (2004) traces the introduction of computers in American schools as dating back to sixties. However, computers were not readily accepted until 1970s and 1990s when they were partially and fully accepted.

In Africa, computers first appeared in schools in North Africa in 1960 principally for management purposes (Clark & Mayer 2003). Since then, ICT integration in management gained swift growth given its power to transform environments in the 21st century. Education like other sectors sought to embrace ICT integration. Adeyemi and Olaleye (2010) found that school administrative functions were increasingly becoming complex and needed powerful tools to realize better communication and effectiveness. While majority of schools frequently integrated computers and internet services in school management information, photocopiers and printers were occasionally used. This pointed out that ICT integration in school administrative activities was evidently at low levels.

The use of ICT in management is viewed variously with regard to its value. Musau, Mulwa and Matemu (2016) claimed that the level of ICT integration in management activities was limited due to lack of internet connectivity in schools. The dire situation impeded online operations; nonetheless, available computers served mainly secretarial services. This painted a picture of inadequate ICT devices for integration in management functions.

In schools that recorded low levels of ICT integration in management, it's incumbent upon principals to be innovative, innovative enough to find ways of acquiring ICTs to integrate in management activities. Richardson (2008) observed that the American Assistance for Cambodia in collaboration with Japan Relief for Cambodia were involved in ensuring integration of ICT in schools. They collaboratively solicited funds, constructed schools, installed solar panels and funded Internet connectivity. Cambodia is basically a developing country, public private partnership involvement was thoughtful in the improvement of ICT status in schools with regard to accessibility and availability.

A study conducted in Cameroon revealed that ICT integration in schools' management and curriculum delivery was through Parents Teachers Association (PTA) projects. The PTA realistically played a significant role as a major source of funding besides private donors and School Funds to a low extent. The schools' management intervention to enhance ICT integration led to the establishment of a compulsory PTA fund which was directed towards acquisition of computers was paid in per annum (Nangue, Creunen & Church, 2011).

The Kenyan Ministry of Education (MOE, 2006) National Policy on ICT outlines strategies of successful ICT integration which include entering into partnership with both public and private organizations to support the course. Muriko, Njuguna and Njihia (2015) established that majority of schools acquired ICTs through School Funds, few through government funds while a paltry number depended on Constituency Development Funds and donors. Similarly, a negligible number of schools acquired their ICTs through the New Partnership for Africa's Development, an organization that was more focused on curriculum development than management. While this is undeniably a good gesture, it's however unclear on the role of principals in bringing such stakeholders into play.

In Busia County Kenya, there was glaring evidence in most schools that government funding on ICT was undoubtedly inadequate. To salvage the situation, well-wishers such as PTAs, individuals and donors came in variously to provide support. This depicts notable shortage of ICTs and computer trained teachers hence putting principals on the spot (Muhinji, Gichui & Riechi, 2013).

On Teacher Professional Assessment Development (TPAD), one of the areas where principals are assessed is innovativeness. Principals are required to be innovative enough in ensuring availability of functional ICTs as global tools of trade to integrate in management activities. However, most schools in Bungoma county have inadequate ICTs to integrate in management activities which raises questions on how principals involved stakeholders in integration of ICT in management. This study therefore sought to establish principals' involvement of stakeholders in integration of ICT in Public Secondary Schools Management.

## 11. LITERATURE REVIEW

### 2.1. The Level of ICT Integration in Public Secondary Schools Management

World over, in this information age various sectors inclusive of education institutions work to embrace ICT integration in management activities. Wang (2008) argued that over the past years, the ever societal changes of digitization experienced, progressively attracted the interests of both schools and teachers. The grown significance in the integration of ICT in school positions the device as an indispensable tool of all essential forms of management. While discussing how ICT was used, teachers and not the management pointed out activities such as reporting, administration and planning purposes. Other ways included communication with parents regarding their children's performances on parents' portals. This did not sit well with all parents as they were not informed through the online system hence the pervasiveness of ICT use is limited (Smits, Voogt & Handlezalts, 2013).

Biegon and Ogola (2017) study in establishing the frequency of ICT use in school management in Nairobi County, Kenya revealed that 70% of schools rarely used ICT in monitoring staff performance while 60% used ICT in record keeping and monitoring at school alongside assigning duties to staff members. Whether ICT was used in communication with students, 50% reportedly never used. This demonstrated that the extent of ICT use in management activities was above average. According to Menjo and Boit (2009), although ICT is an administrative tool in secondary schools, it fails to effectively address administrative issues therein. The duo observed that ICT was fundamentally used for secretarial services and examination processing domiciled in the director of studies office. The low extent of ICT was highly recorded due to inadequate computer hardware and software in addition to lack of trained teachers.

A study carried out in Kakamega county established that 61.9% and 60.9% of respondents in convergence strongly agreed that ICT was used in the director of studies offices for exam results analysis and preparation of students' mark sheets respectively. On the other hand, majority agreed (93.3%) that ICT integration in most management activities was to a low extent (Musambai, Ndirangu & Mukhwana, 2017). Good school leadership is capable of bridging gaps by not necessarily relying on what is at hand but going out of their way to make ends meet.

### 2.2. Involvement of Stakeholders in Integration of ICT in Public Secondary Schools Management

The integration of ICT in schools' management basically requires innovative leadership that goes beyond being provided for. According to UNESCO (2011), notable increase in the use of ICT in the education sector rests in its power to amplify and transform communication. Educators and school administrators are therefore expected to constructively take all essential measures to offer adequate management of their schools. In schools, where principals are viewed as gatekeepers, should demonstrate commitment to compel them embrace technology as the contemporary tool for effective management in this information age. Philips and Sianjina (2013) stated that with emerging technological changes, principals as role models should basically access and integrate ICT as a role model to persuade other members of staff to emulate.

While exploring the impact of stakeholder engagement on the integration of education technology in elementary schools in Switzerland, findings demonstrated that parental engagement had an impact on teacher skills, teacher engagement and school principals. Besides, it emerged that while availability of ICT devices depended on engagement of local school board, teacher leaders and assistants, parents were rarely actively engaged as stakeholders (Petko & Prasse, 2018).

Positive involvement and acceptance of ICT posts high changes of a positive ripple effect on integration. Thabang and Mthulisi (2013) study on awareness and readiness of stakeholders on ICT implementation in rural schools in South Africa affirmed that there was need for funding to facilitate ICT integration in all rural secondary schools in North West and Limpopo provinces. In south Africa, various organizations were hands on in developing and equipping educators in the use of ICT in education. Organizations included Vodacom-SA, Telkom and SchoolNet in the provision of digital classrooms also known as ICT centers which enabled teachers and learners easily access computer and internet. Vodacom on the other hand, donated laptops, projectors, modems and interactive whiteboards. The projects were however meant to promote teaching and learning areas rather than management per se.

Empirical findings have demonstrated that technology is costly and any form of support for ICT integration has been handy. Musambai, Ndirangu and Mukhwana (2017) study in Kakamega county Kenya revealed that although schools had some ICTs acquired through government Economic Stimulus program, there was evident shortage that called for support. The stakeholders came in handy and were variously involved in the integration of ICT. Citing principals and Head of Departments responses, the findings demonstrated that most stakeholders funded ICT infrastructure, organized for fundraising towards ICT and general improvement in areas of challenge regarding ICT use. Although it's clear that stakeholders' play a significant role in establishment and sustainability of ICT integration in schools' management or curriculum implementation, their involvement is the real desired strength.

## III. RESEARCH METHODOLOGY

### 3.1. Research Design

This study adopted a descriptive research design due to its efficiency in assessing information about a population (O'Leary, 2006). In a survey, the intention is to gather data at a particular point in time and use to describe the nature of an existing issue (Cohen and Morrison (2000).

### 3.2. Study Population, Sample and Sampling Technique

A target population is the entire group of people, events or things that the researcher wishes to investigate (Mbwesa, 2008). The study was carried out in Bungoma County, Kenya where a target population of 272 principals were drawn from public secondary schools. According to Lubbe and klopper (2012), a good sample consists of data-rich cases that explain the phenomenon and nature of the subject of interest intensively. A sample size of 82 (30%) principals was selected through simple random sampling technique to participate in the actual study. Borg and Gall (1989) observed that at least 30% of total population provides an adequate representative sample size.

### 3.4. Data Collection Instruments

Interview schedules and questionnaire were used for data collection as they were considered as the most suitable research instruments for a descriptive research design. Unstructured interview gives the interviewer an opportunity to probe interviewee to elicit in-depth information hence collect demographic data required (Kothari, 2004; Mugenda & Mugenda, 2003).

### 3.5. Data Analysis

A mixed methods research approach of both quantitative and qualitative data analysis was used. John and Christensen (2004 cited in Makhanu & Kamper, 2010) observed that quantitative and qualitative research methods are compatible and could be used in a single study. Qualitative data collected through interviews was analyzed descriptively, arranged in subthemes and results presented in form of frequency counts, percentages and verbatim while quantitative data was analyzed using the Statistical Package for Social Science (SPSS) and results presented in Mean Ratings and bar graphs.

## IV. RESULTS AND DISCUSSION

### 4.1. Principals' Responses on the Level of ICT Integration in Public Secondary Schools Management

Table 4.1 presents principals' responses on the level of ICT integration in public secondary schools' management in Bungoma County.

| **Areas of Integration *(n=82)*** | **Great Levels** | | **Some what** | | **Low Levels** | | **None** | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | f | % | f | % | f | % | f | % | $\sum f_{iri}$ | MR |
| Registration and confirmation of KCSE students results | 49 | 59.8 | 22 | 26.8 | 9 | 11.0 | 2 | 2.4 | 282 | 3.44 |
| Communication with stakeholders | 43 | 52.4 | 17 | 20.7 | 13 | 15.9 | 9 | 11.0 | 258 | 3.15 |
| Maintenance of teachers' performance Records (TPAD) | 39 | 47.6 | 21 | 25.6 | 12 | 14.6 | 10 | 12.2 | 253 | 3.09 |
| Maintenance of BOM and PTA minutes | 38 | 46.3 | 23 | 20.8 | 14 | 17.1 | 7 | 8.5 | 256 | 3.12 |
| Documentation of school plant | 37 | 45.1 | 22 | 26.8 | 13 | 15.9 | 10 | 12.2 | 250 | 3.05 |
| Financial records | 36 | 43.9 | 23 | 28.0 | 16 | 19.5 | 7 | 8.5 | 252 | 3.07 |
| Support staff demographic information | 33 | 40.2 | 25 | 9.8 | 16 | 19.5 | 8 | 9.8 | 247 | 3.01 |
| School achievement records | 16 | 19.5 | 8 | 30.5 | 25 | 30.5 | 33 | 40.2 | 171 | 2.09 |
| Research | 8 | 9.8 | 8 | 9.8 | 28 | 34.1 | 38 | 46.3 | 150 | 1.83 |
| Monitoring of school activities | 3 | 3.7 | 13 | 9.8 | 24 | 29.3 | 42 | 51.2 | 141 | 1.72 |
| Total | 302 | | 182 | | 170 | | 166 | | 2260 | 2.76 |
| Average Mean Rating | | | | | | | | | | 2.76 |

Key: MR= Mean Rating; RI= Likert Scale

The interpretation of Mean Rating on likert items according to Goos and Meintrup (2015) was as follows:

| Mean Rating | Interpretation |
|---|---|
| <1.0 | None |
| 1.0-2.49 | Low levels |
| 2.5-2.9 | Somewhat |
| 3.0-4.0 | Great Levels |

Table 4.1 illustrates that on overall ICT integration in school management activities was working however there was variation in levels at which each field integrated ICT. This study alludes that integration of ICT was to a great level (MR=3.44) especially in registration and confirmation of Kenya Certificate of Secondary Examination (KCSE) results as a management function. Further afield, ICT integration in school achievement records (MR=2.09), research (MR=1.83) and monitoring of school activities (MR=1.72) was to low levels. Even though the exercise falls in the Director of Studies office, it's the principals' responsibility to provide and authorize integration of ICT.

According to the Kenya National Examinations Council (KNEC, 2012) directive, registration and confirmation of KCSE students should be done online. Given the sensitivity of exams in Kenya, principals hardly left anything to chance when it comes to this function. A Principal averred;

> "Exams in Kenya are sensitive, so sensitive that we have to look out for possible avenues to ensure we adhere to KNEC guidelines on online registration and confirmation of KCSE candidates. With or without computers, laptops, Internet connectivity and name it, we just have to comply at all costs. This exercise among others has forced us to have school email address for easier and fast communication where necessary."

This extrapolates that with or without ICT devices in schools, principals innovatively found a way of integrating ICT in KCSE activities. Schools disadvantaged with lack of electricity, ICT devices and Internet connectivity, were compelled to outsource alternatives like cyber café services or use of modems as a storage device. This study is consistent with Wanjala, Adhiambo and Ngumbi (2013) findings that 61.4% of public secondary schools in Kimilili sub county adhered to KNEC (2012) directive on online registration and confirmation of KCSE candidates.

Public secondary schools are public entities where communication with stakeholders is basically on daily basis. In this study, integration of ICT in communication with stakeholders was to a great level (MR 3.15). Information in and out to stakeholders including KNEC, Teachers Service Commission, Ministry of Education and Kenya Revenue Authority requires availability and usage of most ICTs. Since the recent past, communication with government institutions is markedly going digital and principals are circumstantially forced to comply with or without ICTs or techno savvy teachers. Other stakeholders where principals communicated to through cellphones, email, automated text messages, voice calls and *whatsapp* groups included parents, guardians, teachers, Board of management and tender applicants. This finding concurs with Mutisya and Mwania (2017) findings on ICT as used for communication where 50% and 40% was with teachers and parents respectively. This finding demonstrated that the level of ICT integration was scaling up in PSSM in Bungoma County. One principal observed:

> "With the new emerging technologies, our work as a school is so effective. We have school *whatsapp* groups where all teachers, parents/ guardians board members communicate on school and students' matters. The disadvantage is that members *whatsapp* compliancy is not guaranteed however automated text messages and voice calls suffice. We have a *whatsapp* group for BOM members, emails, automated text messages and print media inform of letters which are scanned and send to members. This extensively makes communication easy and faster to a great extent".

An outstanding number of schools had problems with Internet connectivity either installation or functionality while insignificant number had functional websites to enable them communicate with parents, well-wishers or donors among others. At most, they accessed and communicated through cyber café, their smart phones or sought assistance from individual teachers and friendly schools with computers and modems whenever such failures were experienced. This finding was divergent to Makhanu and Kamper (2012) finding where 84.0% of principals accessed Internet and email but concurred on use of cellphones for communication. A principal asserted:

> "Other staff members like Deputy Principals, Director of Studies, Class Teachers, accounts clerks, secretary, matron /and housekeeper use cellphones, email, *whatsapp* and Facebook to communicate among themselves and some stakeholders. We have mandated Deputy Principals, Director of Studies, Class Teachers and accounts clerks to communicate with parents using cellphones or *whatsapp* on behalf of school on certain issues. We provide them with Airtime".

Since the recent past, teachers' promotions are based on teachers' performance contracts and TPAD tool be it internal or external appointments as they exercise their professional duties and responsibilities. With or without ICTs to process such management functions, principals integrated basic ICTs in management activities. The findings portray integration of ICT in maintenance of teachers' performance records especially TPAD was to a Great Level (MR 3.09) implying that ICT integration on TPAD adhered to their employer, the Teachers Service Commission guidelines regarding online record documentation and submission. Some responses pointed to the fact that information about teachers' performance was so critical that it must be safely kept and with advanced technological devices, one is nearly 100% assured of safe storage. Teachers spent considerable time in cyber café just to ensure reports are captured and submitted accordingly. A principal avowed:

> "The TPAD is another policy directive where with or without ICTs we have no option but to do the online submission of reports. We spent most of the time in the Cyber café or sometimes ask teachers to assist with their laptops for use. While the latter compromises report confidentiality, because of lack of essential ICTs like computers, laptops and Internet connectivity, we have no option".

The Board of Management, school staff and occasionally PTA meeting minutes were prepared and stored on ICT storage devices to enhance quality on storage, safety and reference to a great level (MR=3.12). This implied that majority were embracing ICT integration in recordkeeping. Schools without ICTs outsourced ICT services to ensure BOM minutes were prepared and maintained safely. The principal as BOM secretary plays a critical role in displaying their administrative competitiveness in ICT. The commitment in integrating ICT was noted in schools with emails and flash disks despite lack of computers. Afshari, AbuBakari, Wong and Afshari (2010) study indicated that school principals were role models whenever ICTs were integrated in management tasks by encouraging creativity and promoting technology friendly environment. Creativity and innovation is an item about principals on TPAD.

The principal as a manager requires information documentation on the school plant which basically explains development records, adherence to school site plan, safety policy standards and other government or professional guidelines. Documentation could be used in sourcing for funding, with attached pictorial evidence and information documented capturing the school history; Flash disks, computers or laptops are valuable for integration in documentation. On this item, a MR=3.05 described as Great level on principals' ICT integration on documentation however, a good number of administrative tasks were mainly in print and on flash disks. Since there was irregular making of changes in the school plant, data in hard copies and filed instead of softcopy. Conversely, others had their records safely stored in computers and flash disks making it easier for retrieval and reference.

With the advent of technology, schools are working towards automating accounts transactions for transparency and accountability as required by the Ministry of Education. Respondents indicated that ICTs were integrated in financial management to a Great level (MR=3.07). However, one principal argued that with the ineptitude of principals, lots of school funds were lost in the hands of techno savvy accounts personnel. In finance department, computer/ laptop, printers, flash disks and cellphones were mostly used in financial transactions but doesn't escape the understanding that most school accounts clerks applied manual way due to lack of ICT skills or lack of device. The study revealed that while some principals allowed MPESA transactions some resented the practice arguing that although MPESA transactions was a convenient process for parents in

fees payment, the method was under preferred due to its own challenges. School financial transactions particularly school fees in cases where MPESA Till Number was authorized by Board of Management to allow transactions, MPESA Till Numbers were displayed in accounts office, principals or parents notice board. This implied ICT integration in financial transaction was to a little extent contrary to Nyanchoka, Matula and Kalai (2015) where a MS=4.57 was greatest among other administrative tasks.

Most principals rarely paid their support staff through banks however with availability of well fitted computers and laptops with essential software, preparation of payment vouchers for workers was doable. More often than not, Board of Management and or Parents Teachers Association meetings were preceded by preparation of school progress reports capturing financial and academic reports among other items. Finance matters basically come under the accounts office however; principals are the ultimate accounting officers who must at all-time be in touch to oversight for transparency and accountability. In some schools, sometimes workers went without salary for months and its unrealistic to pay them through banks. This study corresponds with Muchiri, Ndirangu and Kanori (2014) findings that ICT integration was evidenced in preparation of support staff payroll where 30% strongly agreed and 60% agreed with the assertion.

The establishment of workers' unions and National Social Security Fund for workers required schools to put in place well documented records on support staff demographic information. This finding portray ICT integration in documentation of support staff demographic information at Great Extent (MR=3.01). Such information enabled principals in understanding support staff background so that in case of any eventuality, there is safe retrieval from ICT storage device. Demographic data provides a clear understanding of an individual's qualification being hired; the findings revealed most support staff records were notably in hardcopies.

During schools' quality assurance and standards assessment exercise, there is an item seeking for information on brief history of the school. The study established that integration of ICT in keeping records on school achievements recorded low level (MR=2.09). With ICT storage devices it is convenient for principals to retrieve information at a click of a button. School achievements provide insights on school leadership and with ICT integration in management singles out principal's leadership achievements. One principal observed;

> "Since the onset of performance appraisal, we are actually reporting on our achievements as principals and institutions which can only be effectively done through ICT storage devices. Other achievements including co-curricular activities and school general academic performance records can be stored in form of pictures or videos. Storage ICT devices enhance security of the documents".

Principals are number one instructional leaders and such leadership requires monitoring of students' progress through various records. Slightly over half of the sample schools encouraged teachers to keep students' progress records on available ICTs. A principal from an ICT less equipped school said they agreed as a staff that the few computers available in Director of Studies' office and secretarial pool would be accessed by all where need be. Teamwork spirit encouraged teachers to keep students work on available ICT storage devices and typed hardcopies. This finding resonates with Quest, Kandjeo and Mushaadja (2014) findings that principals' instructional leadership on computer literacy was weak and lacked direction.

Schools endowed with internet connectivity enable principals update their management skills like decision making, benchmarking on success stories on performance, good leadership and teambuilding among others based on policies. The Internet is basically for research and browsing for their study material and benchmarking on best administrative practices and processes. A principal averred "Internet cannot be left to everybody in school to use at will because of the heavy bills and sometimes abuse of such device. It is only prudent that we allow use in director of studies office and principal's secretarial pool". However, the internet use was to a low level (MR= 1.83).

Surveillance cameras are the latest security information capturing and storage ICTs in the market however, this study affirmed that only 1.66% of schools had the device. There was prominent willingness in acquiring surveillance cameras to facilitate management and monitoring of general school plant. On the contrary, this study established that ICT integration in monitoring of school activities was at Low level (MR=1.7). A respondent observed "we had an expert here who advised us on importance of surveillance cameras and today we have at least one which we are in the process of installing to curb school insecurity issues". These findings were dissimilar to Makhanu and Kamper (2010) where no principal had access to surveillance cameras implying that public secondary schools were at infancy regarding use of device in monitoring of school activities as nearly 100% relied on security personnel. On areas where ICT was integrated, a MR= 2.76 was interpreted as Somewhat integrated.

### 4.2. Principals' Responses on Stakeholders' Involvement in Integration of ICT in Management

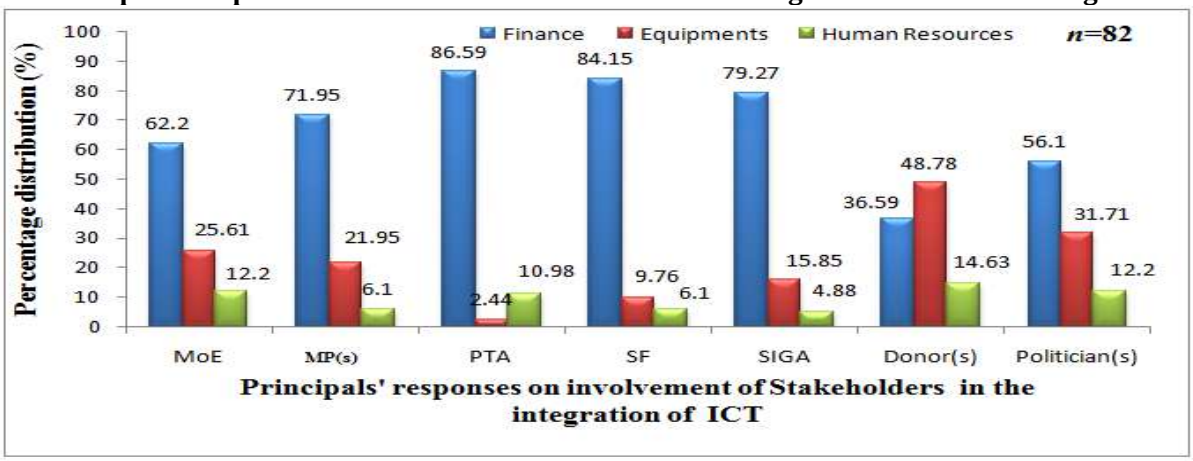


**Figure 4.1. Principals' Responses on Stakeholders Involvement in Integration of ICT in Management**

Fig 4.1 depicts principals' responses on stakeholders' involvement in integration of ICT in management activities in PSSM. The outcome was summed up in three categories namely finance, ICT equipment and human resource. Respondents acknowledged each category of stakeholders provided financial support such as MOE (62.2%), Members of Parliament through CDF kitty (71.95%), PTA (86.59%), School Fund kitty (84.15%), SIGA (79.27%) and other politicians (56.10%) to support integration of ICT in PSSM.

On establishing principals' involvement of stakeholders in integration of ICT in PSSM, the findings indicated that principals involved stakeholders either directly or indirectly. Some reached out to the MOE through proposal writing requesting for financial support to facilitate integration challenges faced or equipment. A principal stated:

> "Although I hear MOE has been funding schools through proposal writing, I have never received such funds in this school or even the devices. I don't understand criterion MOE uses to award such funding, it's such a frustrating undertaking if you ask me. I have given up on proposal writing to MOE for funding even if the school is desperately so much in need".

Conversely, 62.2% of schools received funds from MOE which in some cases was for purchase of various ICTs done through virement. Some schools according to 25.61% of respondents benefitted from government Economic Stimulus Program initiative which accounted for the huge digital divide on computers in each school. Beneficiaries of ESP comfortably talked of their well-established ICT base stating:

> "The government has greatly supported us towards ICT through the ESP. We received 11 computers, a laptop, 11 UPS, a printer, an LCD projector, networking (Local Area Network-LAN) and Internet installation. Although the equipment was meant for students taking computer studies, as a school we can't complain since our teachers are allowed to use and yes, we do integrate some in administrative tasks".

However, this scenario was uneven across public secondary schools in the county as some schools had totally no single computer while others had as much as 1-20 or more from the ESP. Principals engaged the MOE as a major stakeholder through Teachers Service Commission on school ICT/Computer staff establishment as indicated by 12.2% who supported the program for successful integration. Although the Teachers Service Commission units from sub county to headquarters were cognizant of staffing positions in public secondary schools, principals made requests through written, verbal or quality assurance and standards assessment reports where staff establishment was captured.

A principal proclaimed that the school was so much in need of an ICT/ computer teacher but Teachers Service Commission was yet to post one yet school meagre resources couldn't allow them hire one. Through school returns, principals indicated teacher shortage in particular areas and Teachers Service Commission would act by posting ICT teachers to some schools though not always. This study established divergent findings from Nyanchoka, Matula and Kalai (2015) findings where 60% of schools involved teachers in ICT matters than technicians implying more computer teachers. Nonetheless, the latter unspecified whether computer teachers were hired by Teachers Service Commission or inclusive of BoM teachers.

The Kenya government through MOE embraced teacher training and support from the year 2010 under the ESP where five schools per district were identified, equipped with ICT infrastructure and mounted capacity building for teachers. Teacher mentors who would be referred to as ICT champions were recruited to assist teachers to integrate ICT. Further, MOE today trains teachers through SMASSE programs at sub county levels to cascade knowledge to others. According to CEMASTEA/CDE/VOL.VI/026 of 28th Dec 2020, training of

teachers in ICT was placed at 5,259 in 26 counties with 385 earmarked in Bungoma county. A principal observed;

> "Some of our teachers acquired ICT knowledge and skills through SMASSE workshops which has really been instrumental in peer tutoring amongst themselves. Principals ensured teachers of science took part in SMASSE workshops, a program organized by the MOE through CEMASTEA institute".

In Kenya, the Constitution Development Fund is a form of subsidy through which devolved funds in constituencies roll down to finance education among other sectors. For this reason, principals involved their members' parliament who are in charge of Constitution Development Funds through proposals requesting for support towards ICT integration. This study established that 71.95% of schools through principals' leadership and innovativeness received funds from CDFs. For instance, a school was able to install electricity and buy three computers which were assisting in management activities.

Another observed *"Although most Constitution Development Funds are for specific infrastructural projects, our school administration block was constructed to provide room for all Head of Departments and majority with Personal Computers run departmental management programs. The issue of room shortage is now behind us although the school lacks basic ICTs".* In as much as Constitution Development Funds were handy, Members of Parliament were easily involved during campaign seasons where they took advantage to organize for fundraising purposely for acquisition of ICTs. Innovativeness is one of the required qualities on TPAD and such principal was effectively practicing what is required of them. This study established that members of parliament through Constitution Development Funds indirectly supported schools in ICT acquisition which echoed Ng'alu and Bomett (2014) findings that members of parliament in ICT integration matters was not directly reflected.

Principals brought members of parliament on board regarding ICT equipment and infrastructural acquisition and human resource support. Interestingly, schools that acquired computers through Economic Stimulus Program were the same beneficiaries that received CDFs support for ICT which accounted for wide discrepancies in available ICTs. A principal observed:

> "I even don't know how it happened but when I heard the area Member of Parliament was going to give out computers to some unknown schools, I decided to approach the Constitution Development Fund manager to talk to the Member of Parliament about my interest in the computers. I was lucky I received more than I expected because not all schools received the donation".

Through cost sharing policy, parents under PTA school projects were the main financiers of school projects. A massive 86.59% of respondents acknowledged that through PTA projects, schools comfortably purchased essential ICTs such as computers, management software, printers, photocopiers, installation of electricity, modems, maintenance of school Internet services and hiring of ICT technicians. Conversely, developing schools commonly known as CDFs schools with low enrolment had difficulty getting funds from PTA.

A principal averred, *paying fees is a huge challenge among parents which would be unrealistic again for me to expect them fund ICT projects. I will continue outsourcing ICT services from cyber café or from my teachers.* However, most ICTs in schools were acquired through PTA computer projects and also helped to maintain and service ICTs at the same time. Contrary to this study where principals highly involved parents through PTA in integration of ICT, in Oloo (2009) a paltry 16.07% of PTA contributed towards ICT in secondary schools. Principals usually persuade parents during Annual General meetings while others make written requests to County Director of Education to allow them levy parents on ICT projects.

In some schools' parents under the flagship of PTA projects, individually contributed ICT equipment in form of laptops, printers and computers as revealed by 3.65% of respondents. Most support staff in secondary schools are hired by BOM and paid through PTA levies included technicians and computer teachers whose services included maintenance, repair and ICT user support where necessary. A principal observed:

> "Hiring a highly qualified ICT technician is rather costly thus why we go for certificate level holders who sometimes are incompetent anyway. This is because the more qualified the higher the remuneration which we might not afford; we instead prefer outsourcing for more qualified personnel and services despite the challenges that come with it".

This finding concurs with Katulo (2009) and Oloo (2009) that most schools depended on computer teachers and or outsourced services courtesy of PTA levy. Principals' innovativeness is evident in efforts to cut on costs to integrate ICT.

Some principals through school fund kitty supported integration of ICT. Majority (84.15%) funded integration of ICT with regard to Total Cost Ownership besides supporting PTA project in remuneration of workers. School funds are usually through tuition, repair and maintenance vote heads which involved BOM meeting minute to authorize virement and expenditure. This however varied from school to school with regard to economic status as upcoming schools could not benefit much from school funds.

Innovativeness is a leadership skill to develop structures meant to support and sustain school projects financially. According to 79.27% of respondents, various SIGA were established in schools depending on what BOM would find viable. A slightly below average number of schools funded ICT programs and hired human resource at the same. In the sugar belt region of Bungoma County, a paltry 9.8% of schools acquired computers and printers from sugarcane profits just as 6.1% in the large scale maize farming regions. Schools with more than 10 computers and buses turned them into SIGA where outsiders enrolled for computer package lessons at a fee and hired buses respectively. This finding partially concur with Omukoba, Simatwa and Ayodo (2011) study that some SIGA according to 33.3% included dairy farming, crop farming, hiring of school bus while 55.5% cited accommodation and 44.4% cited house rent.

While introduction of SIGA is sometimes principals' creativity, a principal asserted that she really worked hard to convince BOM on virement of SIGA funds towards ICT integration since SIGAs' proceeds are for self-sustenance. To 36.59% of respondents, the introduction of ICTs in some schools may be costly hence the attraction of donors and well-wishers to financially support integration in PSSM. One principal observed, *we receive funds from a donor friend of the school strictly for school website maintenance.* Another averred,

> "One donor funded our deputy principal for an ICT certificate course at Kenyatta University and through cascade model our HODs and class teachers acquired basic knowledge and skills on ICT integration like record keeping, preparation of professional records and communication".

A principal opined,

> "Yes, donors come in handy on matters ICT. A donor gave us five computers for our geography department which were inadequate for curriculum delivery so we requested him to allow us convert into management use within the department. I am happy to report that the response was in the affirmative hence the department today integrates ICT in management activities. Since the school is short of ICTs, the department and other members of staff access ICTs for use."

Conversely, some principals either through proposal writing or partnerships received limited technical support from donors like schoolnet, Computer for Schools Kenya and national government which wasn't generalized to all sample schools. Some schools had computers, laptops, printers and photocopiers from a rare crop of donors usually through principals' networking skills. In isolated cases, school alumni groups/ individuals provided support to schools as in a case where an alumni contributed four computers, photocopier and several modems. This finding resonates with Biegon and Ogola (2013) findings that majority of teachers were in agreement that for enhanced and sustained integration of ICT in management, principals should think out of the box by going out of their way to source for external support to facilitate integration of ICT in management practices.

Apart from CDF, all cadre of politicians have specific times where they really come in handy on school development projects. In a less than five-year-old school since registration, among other projects, local politicians helped install electricity and financed acquisition of two computers and a photocopier; a case that consumed a lot of the principal's time, energy and negotiation skills in follow up both verbally and written requests. However, a great number of schools were not supported by such politicians in ICT even on request. A principal observed:

> "I hear politicians in the county government support schools in ICT gadgets and other areas, l have severally reached out to them to support us even with a mere desk for learners but nothing has been forthcoming."

A young school endowed with ICTs, the principal, deputy principal, director of studies, all Heads of Departments and secretarial pool had computers with the latter having printer, photocopier, scanner and modems courtesy of a local politician. Some schools hired ICT technical personnel and teachers besides maintenance of devices while Internet connectivity in three schools was funded by politicians though dysfunctional due to poor maintenance. Politicians as stakeholders have high expectations on principals' performance because they believe better service delivery fundamentally leads to success in academic performance.

Another principal observed: *"As a school we have greatly benefitted from our politicians on ICT gadgets. It's just unfortunate that we are not able to maintain some like our Internet is not working because of cost implications"* Another observed*: "Through networking we managed to reach our politicians to support us in ICT and today we have a good number of computers lack of room for all teachers to access ICTs notwithstanding. We are doing well and looking forward to more support towards construction of spacious staffroom to enable us put to use our desktop computers".* The role stakeholders played in establishing and embracing ICT concurred with Nandwah (2011) study that stakeholders greatly contributed to principals' growth for effective and efficient running of schools.

## V. CONCLUSION

This study concluded that:

(i) The level to which ICT was integrated in management activities to a great level rotated majorly in registration and confirmation of KCSE candidates and exams, communication, preparation of staff and BOM meeting minutes, documentation of school plant and preparation of timetables.

(ii) Principals involved stakeholders in integration of ICT in management activities by depending on PTA projects through which parents supported programs financially in acquisition of ICT equipment and hiring of technicians. The MOE as a major stakeholder was involved in financial and equipment support this came with principals' special requests through proposal requests and indirect requests.

## VI. RECOMMENDATIONS

The following recommendations were made:

a) Principals in their leadership should be more innovative to come up with structures to facilitate accessibility to ICT equipment in school management areas.

b) The government should support Public Secondary Schools by sensitizing various stakeholders on the benefits of ICT integration in school management tasks and support.

c) The government should assist in identification of stakeholders to support schools either materially or financially to establish and sustain ICT systems.

d) Principals should enhance investment in SIGA to facilitate acquisition and maintenance of ICTs in schools.

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