Journal of Education and Practice
ISSN 2222-1735 (Paper) ISSN 2222-288X (Online)
Vol.6, No.9, 2015

Financing Information Communication Technology Projects in Secondary Schools E-Learning: A Case of Mombasa County, Kenya

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Abstract
Information communication and technology (ICTs) has become common place entities in all aspects of life. Within the education sector, ICT has begun to have a special attention although not extensively as in other fields both globally and locally. Limited funds still presents a challenge in rolling out the e-school projects in Kenyan secondary schools and more so in Mombasa County. This paper presents trends in financing ICT projects in secondary schools in Mombasa County and how projects in the sampled schools which are ICT complaint manage the IT programmes. Furthermore, the paper also sought to uncover the alternative financing options available that could complement the existing ICT projects in increasing the pace of e-schools project implementation. A case study was used using three categories of respondents in each school namely; the administrators, the teachers and the students who were issued with questionnaires and interview schedules whose results revealed that many of the schools which had ICT facilities depended heavily on government funding CDF in financing the ICT projects. The paper also reports that the schools under study were already using educational management software for various processes in the schools. It was revealed that schools still faced infrastructural challenges due to inadequate finances. Notable challenges including limited funding to support the purchase of the ICT facilities to improve access to educational materials, lack of training for teachers to adopt ICT as a teaching tool and lack suitable e-content for various subjects. The outcome of the findings indicated that largely the initial objectives of the project had been realized in a number of the sampled schools. Teachers, students and the school administrators were using computers to access educational resource material from the internet, prepare and process examination results, manage, monitor and process financial reports and communicate using email. It was also evident that the quality of teaching and learning, students' level of interaction, reasoning, recall, synthesis and evaluation had improved tremendously. It is upon this background that the paper sought to analyze the impact of financing ICT projects in managing of secondary schools e- learning in Mombasa County, Kenya.
Keywords: ICT Projects, Financing, Education

1.0 Introduction

Secondary education occupies an important position in the educational system. It is aimed at providing functional education to the youths, preparing them for a successful or useful living within the society, and for higher education. Training in ICT adequately prepares the youths by providing them with holistic knowledge to cope with the dynamic technological world which is gradually turning the world into a global village. The implementation of ICT project is in line with the government's commitment to introduce ICT in primary, secondary and tertiary education institutions contained in sessional paper No. 1 of 2005 and ICT Draft Policy of 2006. According to the Draft Policy the government will provide educational institutions with ICT resources in form of computer hardware, software and ICT teachers. It is instructive to note that from as early as 1990 an increasing number of secondary schools in Kenya acquired computers through the initiative of parents, community and politicians. Some of the computers were donations from well wishers (Kavagi, 2001).

It has been noted that failure by educational institutions to embrace ICT innovation has been as a result of inadequate funding by the government (Richardson 2007). Without financial support of the government and assistance from development partners introduction of computers in educational institutions will continue to remain an expensive venture in spite of the fact that the cost of hardware and software has been coming down over the years (MOESTa, 2005). This project took cognizance of the fact that most rural Kenyan schools had limited resources and therefore fewer opportunities to benefit from development made available through new technologies. It is imperative to note that the Kenya government supports secondary school education through provision of grants for purchase of learning materials and hiring of teachers.

IT training in secondary schools is recognized as exceptionally important by the Kenyan government and its population. In fact in June 2006, during computers and their associated accessories were made tax free, as a measure of this recognition. This positive aspect however still does not enable disadvantaged communities to build ICT classrooms or even equip their secondary schools with the most basic IT equipment due to the cost

implications. As a consequence computer training, including internet is very limited to very few schools, mostly in urban areas. The Kenyan government considers investing in education as a major vehicle to enhance development in the country (MOESTb, 2005). Taking ICT as an educational technique to the Kenyan schools is one of the major objectives in the Kenyan ICT strategy (MOEST, 2005).

2.0 Empirical Review

2.1 ICT Implementation in the Government of Kenya

Over the last five years, the Kenyan government has initiated some capital investment towards set up and installation of ICT infrastructure. Funding for these investments is achieved through partnerships between the government and development partners. The foreign funding component constitutes the largest percentage of this investment in terms of technology. The government contribution is usually in the form of technical and support staff and facilities including buildings. So far, the Government Information Technology Investment and Management Framework is connecting all ministries to the Internet under the Executive Network (Limo, 2003). The government is also connecting the ministries to run integrated information systems for example the Integrated Financial Management Information System (IFMIS) and the Integrated Personnel and Pensions Database (IPPD). While developing countries may have similar characteristics, the Kenyan context presents various challenges that affect the successful implementation of ICT projects.

2.2 Application of Computers to Support Instruction and Learning

It was noted that currently the application of ICT to support instruction and learning was very limited. However students had been trained on basic knowledge and skills in computers and were able independently to use word processing, surf the net, use e-mail to communicate with their colleagues locally. Furthermore they were able to use the new found skills to search for new knowledge and information from the net. It is also instructive to note that the amount of hours in accessing the internet is important (Cairncross and Poysti, 2006). Accessibility is also a function of the availability of an e-learning classroom and the number of computers available in the school. The MOE in issued 11 computers to the selected schools in the district in it first phase of the project implementation. These numbers of computers are not adequate to enable the schools to produce students to function effectively in a technologically changing society who can fully participate and function adequately as professional workers in a technological society (Williams *et al.*, 1999). Also to improve instructional and learning outcomes in the schools in addition to transforming learning from traditional teaching and learning to E-learning that is based on technology.

2.3 Challenges to the ICT Project

However, it was noted that the implementation of the ICT project was likely to face challenges if the leadership of the schools changed at the crucial stage of the project implementation. This is true also if new school board members are appointed or if the computer teachers left. School management is the soul and heart of the project which supports student learning, infrastructure, pedagogical, monitoring, implementation and teacher training (Ramsay, 2001).

To minimize the impact of such risks it is suggested that a school project team be formed to oversee the implementation of the project so as to ensure that at any one time there are teachers in possession of the necessary project knowledge in case any transfer occurred and also so that there are able to support each other and share ICT knowledge and practice. Shortage of professionals qualified in ICT, regular supply of reliable electric power and reliable internet connectivity could also pose a challenge to the project. These challenges are best handled by the government through the local education offices.

3.0 Research Methodology

3.1. Research Design

Descriptive study was used in this study. Kathuri & pals (1993) assert that in descriptive survey, research questionnaires are usually used to determine the opinions, attitudes, preferences and perceptions of groups of people of interest in research and therefore were suitable for this study. In this study the information was collected through self-administered questionnaires distributed personally to the subjects by the researcher. Descriptive survey is preferred for this study because it provides an accurate portrayal or account of the characteristics, for example behavior, opinions, abilities, beliefs, and knowledge of a particular individual, situation or group.

3.2 Target Population

The researchers' target population was 40 secondary schools sampled from various primary schools within the county. For effective conducting of the survey, the research locale was put under manageable administrative structures. In an exploratory descriptive survey, informed specialist and consumers are very crucial in giving

detailed information, (Orodho, 2004). This included the head teachers, ICT instructors, ICT technicians, teachers (4), students (7), and Board and PTA members (2). Discussions were held with local project responsible persons that is, the headmasters of the sampled schools, board representatives, local education officer, teachers and students.

3.3 Research Instruments

The main data collection instruments were a structured questionnaire and interview guide. According to Kothari (2009), questionnaires are simple to administer and relatively inexpensive to analyze. The questionnaire is an instrument used to gather data which allows measurement for and against a particular view point (Orodho, 2005).

3.4 Validity and Reliability

Mugenda and Mugenda (2003) describe validity as the degree of accuracy and mindfulness of inferences, which are based on the research results. It determines how accurately the data obtained in the study represent the variables of the study. It is the degree to which an instrument measures what it is supposed to measure. Questionnaire is one of the best tools to be used to get information. The researcher developed a good rapport that enabled the respondents interact freely and give their views in an open and honest manner. This enabled the researcher to make the necessary modifications to the instruments before administering them in the field.

Reliability refers to the degree to which research instruments yields consistent results after repeated trials. Reliability in research was influenced by random error of which if it is high, reliability is low. Errors are due to instruction and language difficulty, as advanced by (Mugenda & Mugenda, 2003).A reliable tool is the one that is capable of producing consistent results any time it is used, observes (Kothari, 1990). The reliability of the questionnaires will be assessed by use of test- re-test design.

3.5 Data Collection Procedure

Before data collection, the researchers sought permission from the NACOSTE and then wrote letters of information seeking permission to avoid any mistrust and withholdings of information. The researchers therefore paid visits to various schools to administer questionnaires to the respondents for purpose of data collection.

3.6 Data Analysis Techniques

Data analysis is the process of using various statistical procedures with a view to interpret data. Before the actual data analysis, the information gathered was validated, edited and manually coded and tabulated using Statistical Package for Social Sciences (SPSS) version 20 computer programmed. In validation process, the collected data questionnaires were checked in terms of used instruments by use of computer. Data analysis was done using both qualitative and quantitative techniques. Qualitative Analysis of data was analyzed using descriptive statistic. The purpose of descriptive statistic is to enable the researcher to meaningfully describe the pattern and trend of enrollment and retention.

4.0 Research Findings

4.1 Adoption of ICT in schools

The findings indicated that the sampled schools had generally embraced the use of ICT technology and that the project is sustainable.

4.1.1 Student Usage of Projector in Learning

Table 4.1 *Students Usage of Projectors in Learning*

	Frequency	Percent	Cumulative Percent
Not available	2	1.1	1.1
Not used	32	17.3	18.4
Rarely used	89	48.1	66.5
Fairly used	51	27.6	94.1
Frequently used	11	5.9	100.0
Total	**185**	**100.0**	

Table 4.1 indicate (2) 1.1 percent said that projectors were not available in their schools, 32 (17.3) percent said that they were available however not used, (89) 48.1 percent said that they were rarely used though available in schools, (51) 27.6 percent of the projectors available in schools were fairly used and (11) 5.9 percent indicated they were frequently used in schools. This is implies that schools to a large extent rarely use projectors in teaching and learning in secondary schools. The findings are in consistent with the government policy of enhancing IT in teaching and learning.

4.1.2 Student Usage of VCDs and DVDs in Learning

Table 4.2 *Students Usage of Cassettes in Classes*

	Frequency	Percent	Cumulative Percent
Not available	143	77.3	77.3
Not used	32	17.3	94.6
Rarely used	10	5.4	100.0
Total	**185**	**100.0**	

Table 4.2 reported that 10 percent of the schools sampled indicated that the VCDs and DVDs were not available in their schools, 13 percent though had them but not used in the teaching and learning, 43 percent said they rarely used them in class or in teaching and only 34 percent were of the opinions that they fairly used the VCDs and DVDs. This explains that teaching in secondary schools is still limited to the traditional old methods and the use of the IT still not well integrated in the schools in. Mombasa County

4.1.2 Student Usage of Commercial Slides Modems

Table 4.3 *Students Usage of Commercial Slides Modems*

	Frequency	Percent	Cumulative Percent
Not available	80	43.2	43.2
Not used	28	15.1	58.4
Rarely used	51	27.6	85.9
Fairly used	26	14.1	100.0
Total	**185**	**100.0**	

Table 4.3 reported that (80) 43.2 percent of the schools sampled indicated that the modems were not available in their schools, (28) 15.1 percent though had them but not used in the teaching and learning, (51) 27.6 percent said they rarely used them in class or in teaching and only (26) 14.1 percent were of the opinions that they fairly used the modems. This explains that teaching in secondary schools is still limited to the traditional old methods and the use of the IT still not well integrated in the schools in Mombasa County.

4.1.3 Student Usage of Flash Disks

Table 4.4 *Students Usage of Flash Disks*

	Frequency	Percent	Cumulative Percent
Not available	70	37.8	37.8
Not used	51	27.6	65.4
Rarely used	58	31.4	96.8
Fairly used	6	3.2	100.0
Total	**185**	**100.0**	

Table 4.4 reported that (70) 37.8 percent of the schools sampled indicated that the flash disks were not available in their schools, (51) 27.6 percent though had them but not used in the teaching and learning, (58) 31.4 percent said they rarely used them in class or in teaching and only (6) 3.2 percent were of the opinions that they fairly used the flash disks. This explains that teaching in secondary schools is still limited to the traditional old methods and the use of the IT still not well integrated in the schools in Mombasa County.

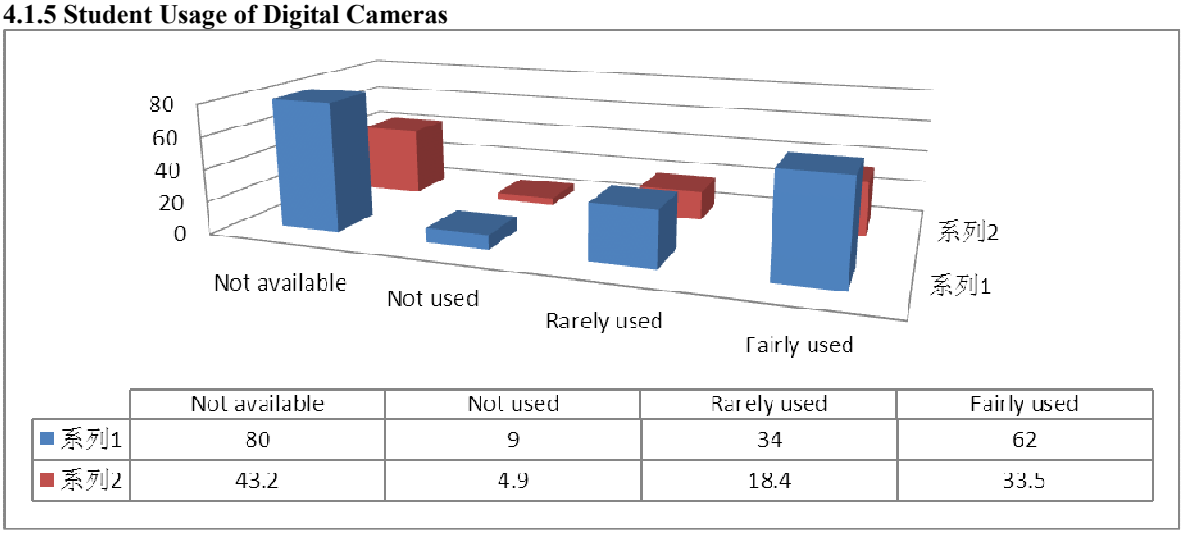
4.1.4 Student Usage of Memory Cards

Table 4.5 Students Usage of Memory Cards

	Frequency	Percent	Cumulative Percent
Not available	91	49.2	49.2
Not used	29	15.7	64.9
Rarely used	48	25.9	90.8
Fairly used	17	9.2	100.0
Total	**185**	**100.0**	

Table 4.5 reported that (91) 49.2 percent of the schools sampled indicated that the memory cards were not available in their schools, (29) 15.7 percent though had them but not used in the teaching and learning, (48) 25.9 percent said they rarely used them in class or in teaching and only (17) 9.2 percent were of the opinions that they fairly used the flash disks. This explains that teaching in secondary schools is still limited to the traditional old methods and the use of the IT still not well integrated in the schools in Mombasa County.

4.1.5 Student Usage of Digital Cameras



	Not available	Not used	Rarely used	Fairly used
系列1	80	9	34	62
系列2	43.2	4.9	18.4	33.5

Figure 4.1 *Students Usage of Digital cameras*

Figure 4.1 reported that (80) 43.2 percent of the schools sampled indicated that the digital cameras were not available in their schools, (9) 4.9 percent though had them but not used in the teaching and learning, (34) 18.4 percent said they rarely used them in class or in teaching and only (62) 33.5 percent were of the opinions that they fairly used the flash disks. This explains that teaching in secondary schools is still limited to the traditional old methods and the use of the IT still not well integrated in the schools in Mombasa County.

4.2 Students' perception on the usage of ICT

Table 4.6: The School Has the Adequate ICT Facilities for Teaching and Learning

	Frequency	Percent	Cumulative Percent
Not available	9	4.9	**4.9**
Not used	58	31.4	**36.2**
Rarely used	16	8.6	**44.9**
Fairly used	82	44.3	**89.2**
Frequently used	20	10.8	**100.0**
Total	**185**	**100.0**	

Table 4.6 reported that (9) 4.9 percent of the schools sampled did not have ICT facilities in their schools for teaching and learning, (58) 31.4 percent though had ICT facilities, they were not used in the teaching and learning, (16) 8.6 percent said they rarely used them in class or in teaching and learning while only (82) 44.3 percent were of the opinion that they fairly used the ICT facilities and only (20) 10.8 percent frequently used them. This partly explains why teaching in secondary schools is still limited to the traditional old methods in schools in Mombasa County.

4.3 Servicing ICT facilities

Table 4.7 *ICT Infrastructure Is Regularly Serviced*

	Frequency	Percent	Cumulative Percent
Not available	19	10.3	10.3
Not used	10	5.4	15.7
Rarely used	38	20.5	36.2
Fairly used	90	48.6	84.9
Frequently used	28	15.1	100.0
Total	**185**	**100.0**	

Table 4.7 reported that (19) 10.3 percent of the schools ICT facilities are regularly serviced, (10) 5.4 percent though had ICT facilities regularly serviced, (38) 20.5 percent said they rarely serviced ICT infrastructure while only (90) 48.6 percent were of the opinion that they fairly serviced ICT infrastructure and only (28) 15.1 percent frequently serviced ICT infrastructure. This partly explains why teaching in secondary schools is still limited to the traditional old methods in the schools in Mombasa County.

4.4 Teachers have skills on Servicing ICT facilities

The questionnaire was designed to get information on teacher competency skills on ICT management and usage in Secondary schools in Mombasa County?

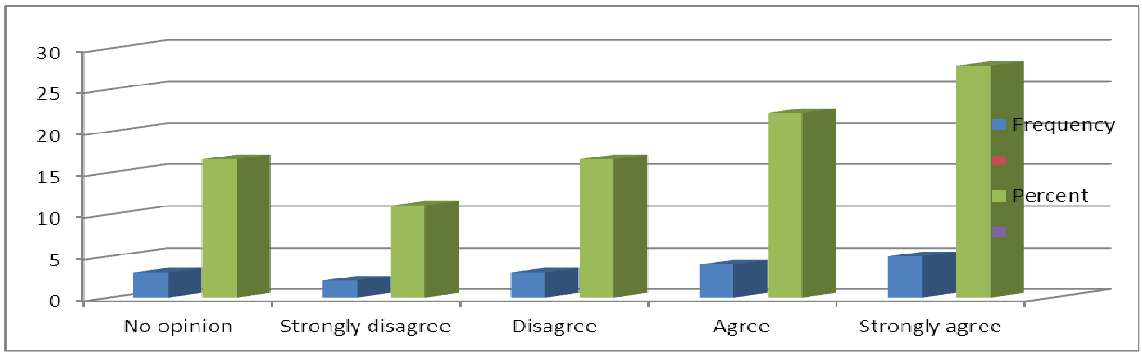


Figure 4.2 Teachers have skills on Servicing ICT facilities

Figure 4.2 reports that 16.7 percent of the teachers had no opinion on their knowledge on servicing ICT facilities 11.1 percent strongly disagreed 16.7 disagreed, 22.2 percent agreed, 27.8 percent strongly agreed that they have skills to service ICT facilities while 5.6 percent did not answer.

5.0 Recommendation and Conclusion

The findings of this paper indicated that vision and strategy and government and donor support are considered important for success of ICT project planning and implementation, while lack of funds and poor infrastructure are considered as major challenges. The first phase project objectives and plans in the selected secondary schools appear largely to have been achieved in accordance with the Project timelines. The application of ICT to teaching, learning and management of education has been moderately demonstrated. The success of ICT project is attributed to a number of factors which include the support and attitude of teachers, students, government officials, the community and donors. To fulfill the development needs of ICT projects, those involved in the design, planning, implementation and management of IT-related projects and systems in the developing countries must improve their capacity to address the specific contextual characteristics of the organization, sector, country or region within which their work is located.

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