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DETERMINANTS OF IMPLEMENTATION OF THE DIGITAL LITERACY PROGRAM IN MAKUENI COUNTY, KENYA

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Abstract: *The use of Information Communication Technologies has dramatically changed services, business models, and people's expectations of the quality and efficiency of information sharing and service delivery. E-government is one fundamental element in the modernization of government business processes. It provides a competitive edge in service delivery across the civil service, enhances collaboration in public sector organizations and institutions, interaction of government and business community and between the Kenyan government and the citizens that it serves in line with vision 2030.*

Objectives: *The objectives of this study are to; Determine the effect of Training and ICT usage; establish how availability of adequate funds affect service delivery: determine how ICT infrastructure affect service delivery: evaluate the effect of staff ICT competency on service delivery. This study was guided by two theories; Expected Behaviour theory and technology acceptance model.*

Findings: *From the findings, values of the adjusted R square were 0.880. This value showed that there was a strong relationship between training & usage, funding, infrastructure, competency and service delivery. The study also finds that inadequate funding is the greatest impediment to the implementation and use of ICT in government services. It was as well found out that allocation of adequate funding for ICT poses as a challenge to improved usage among DLP when delivering the government services to public primary schools in Makueni County. Funding was found to be the most influential variable on service delivery. The tolerance and variance inflated factor were found to be 0.486 and 2.377 respectively. The interpretation was that given that the tolerance value was below 0.5 and the variance inflated factor below 5 it thus showed that there was no collinearity problem.*

Keywords*: Diligital Literacy Program, Service Delivery, ICT infrastructure*

I. INTRODUCTION

Kenya through its vision 2030 aims at making the nation prosperous by according its citizens a high standard of living and making the country globally competitive. One of the pillars of this vision is Information Technology enabled services (Kenya Vision 2030, 2008) DLP being on that list. Information and Communication Technology (ICT) has turn out progressively to be an important factor in the development process of nations. According to ICT Authority (ICTA), Strategic Plan Paper 2013, some of the benefits of embracing ICT in public service delivery are to eliminate fraud and /or corruption in delivering of public service, improve efficiency and effectiveness in resources utilization, improve access and security to information and provide access to shared transport data through both the internet and mobile technologies.

ICT strategies within the Kenya Government are executed by ICTA, a body authorized to restructure the adoption and use of ICT systems and processes within the Kenyan Government. The Ministry of ICT through the ICT Authority is mandated to formulate policies that touch on ICT human capital development, Information Security, Innovation and Enterprise, Shared Services and ICT Governance. One of the strategies in implementation of ICT was DLP programme, which was initiated by the government back in 2013 aims at ensuring pupils in standard one to three are able to use digital technology and communication in learning with the major goal being transforming learning in Kenya into a 21st century education system. The programme is being implemented in phases and that construction of computer laboratories are one of the deliverables in phase two of the programme. The labs are to enable learners from upper grades of class four to eight access the labs to ensure there is inclusivity for all the learners. On sustainability of the programme, the tablets are being assembled locally by the JKUAT in conjunction with Moi University, this was according to the ICT Cabinet Secretary Joe Mucheru. The Fibre Optic Connectivity in every sub county was to enable the establishment of the Constituency Innovation Hubs (CIH) which also ensure that the DLP program was a success by providing the required connectivity to different schools location in Makueni County. This research therefore aims at finding out the determinants of the implementation of ICT in Makueni County.

ICT Strategy

According to Floyd (2010) information technology strategy is an organization's general policy that entails purposes, values, and procedures that relate to usage of technologies in a given organization or institution. LaBelle (2005) elaborates that "strategy direct the body of policies and provide a framework for their implementation with clear goals". LaBelle (2005) elaborates that some of the areas where ICT Strategy focuses on include; New and creative ways of using ICT for better value provisioning for system users and sharing of public infrastructure to ensure efficiencies are obtained via consolidation of resources and structures, increased output and efficiency via adoption and use of digital infrastructure to progress and advance the relationship between the general population, companies and government, increasing efficiencies through integrated services and increased data sharing to facilitate improved decision making; increased openness and transparency between Government and its citizens, provision of advanced user experience and superior services to the general public.

ICT Authority (ICTA)

The Information and Communication Technology Authority is a parastatal under the Ministry of Information Communication and Technology and was formulated under the Executive Order No.2 of 2013 on the Reorganization of Government under Legal Notice No.183 of 2013. The Authority is authorised to ensure that ICT systems and processes are adopted and used within the Kenyan Government. The Ministry of ICT through the ICT Authority is mandated to formulate policies that touch on ICT human capital development, Information Security, Innovation and Enterprise, Shared Services and ICT Governance.

ICT Authority (icta.go.ke) is mandated to ensure development of human capital and build capacity. ICTA also makes sure that end systems are used effectively to deliver timely, affordable and effective services to the citizens of Kenya. The authority also ensures that ICT industry leaders adopt ICT skills when making strategies and policies for their organization.

ICTA is also mandated to promote and enhance ICT governance in government ICT projects and make sure such projects are aligned to the national objectives. On information security, ICTA ensures that there are pro-active measures setup to identify and mitigate threats and risks poised on ICT infrastructure and processes. It

also encourages enterprise and innovation by providing mentoring and opportunities of partnerships. It also builds, maintains and operate infrastructure that enables efficiency and effectiveness in accessing government services and reduce the cost of communication.

In embracing e-Government, the developed economies have accelerated their growth by creating ease of access and delivery of public services. Innovative use of information and communication technology based information can result in better service delivery, an informed society and ultimately better economic performance at all levels. In Kenya, the e-government secretariat was established in June 2004 under cabinet office with its overall goal being to spearhead implementation of e-Government strategies with an aim to make the government and its ministries more result oriented, efficient and citizen centered.

Service Delivery and Information Communication Technology

Implementation of ICT and particularly E-government is one fundamental element in the modernization of government business processes (Gachoya, 2005). It provides a competitive edge in service delivery across the civil service, enhances collaboration in public sector organizations and institutions, interaction of government and business community and between government and the citizens that it serves in line with vision 2030. The information may concern its customers, suppliers, products, equipment, procedures and operations. Information Communication Technology in an organisation is required to help it analyse the business along with its environment, formulate, and check that it achieves its goal. ICT facilitates flattening of hierarchies by broadening the distribution of information to empower lower-level employees and increase management efficiency (O'Brien, 2004). ICT pushes decision-making rights lower in the organization because lower lever employees receive the information they need to make decisions without supervision. Because managers can now receive so much more accurate information on time, they become much faster at making decisions, so fewer managers are required. Management cost declines as a percentage of revenues, and the hierarchy become more efficient businesses are using ICT to support basic information-processing tasks. These task range from computing payroll checks, to creating presentations, to setting up websites from which customers can order products.

Digital literacy program (DLP)

The digital literacy program was initiated by the Kenyan government back in 2013.The program is targeted at learners in all public primary schools and aimed at integrating the use of digital technologies in learning. The decision is borne out of the vision and the fact that technology drive the current world and there is need to prepare our young generation for the rapid change and today's realities. The Ministry of Information and Communication Technology is the main driver of the program with the implementing body being ICT Authority Kenya. DLP was rolled out in all public primary schools in 2017 after piloting in selected schools in 2016.Apart from enhancing delivery of quality education, the programme is expected to have a ripple effect on the economy. For example, it has increased power connectivity and security in far-flung areas opening up business opportunities that utilize electricity. In Makueni county all schools are connected to the grid. Beside distributing DLP devices, the government also posted ICT officers in the counties to offer technical support to schools for smooth implementation of the programme.

However the programme lost momentum soon after the launch due to various bottlenecks. Some teachers interviewed by KNA said that the devices were not equipped with the current syllabus content. Others could simply say they were still not able to operate the devices despite having been trained and asked to escalate the challenges encountered.

Statement of the problem

Information communication technology (ICT) is key to service delivery and is one of the essential factors in promoting growth in the economy. Information and Communication Technology is necessary in the modern fast economic and technological developments in the global business environment in order to remain competitive. As a result of an increased emphasis on a knowledge-based economy, many organizations are realizing that their people and information resources are critical to survival and success (Laudon and Laudon, 2006).

According to Mbote (2003) established, ICT can be utilized to improve service delivery by extending services to customers over the Internet, facilitating account queries via short message services (SMS), facilitating on-line payments and adopting e- business. Karuga (2010) did a survey of impact of ICT on business value creation in Kenya banking sector. The study concluded that ICT has a positive effect on banking industry. With Many customers, accepting the fact that service delivery in the banking sector has greatly improved

Ndavi (2015) carried out a study on "Factors affecting adoption of e-tendering systems among public institutions" attempts to assess the level of satisfaction with the e-delivery of services that users receive from e-tendering applications. He observed that several changes have taken place in Kenya concerning ICT though not properly through a legal framework over the first 10 years of inception.

(Fridah Kathure, 2014) carried a study to identify the key issues that could affect the success of the e-GP implementation and adoption process in the perspective of public sector found that e-GP planning, e-GP change management, e-GP policies, and e-GP HRM practices) had strong positive significant relationship with efficient e-GP implementation indicating that sound management plans guided by well-defined procedures and handled by trained and experienced HR professionals would lead to efficient e-GP implementation.

Although in many cases, the utilization of ICT has led to improved business results this is not always the case. Lelei (2007) found out that the ICT goals could not always be realized as expected. The researcher attributed to the high cost of ICT projects' implementation, high cost of ICT staff, struggles of change management, high expectations from ICT and other stakes.

The government of Kenya came up with various strategies and structured bodies to look at the issue of ICT across the country. The ICT Authority (ICTA) is mandated to oversee and maintain the implementation of various ict related project for the government. For instance: Currently, all the government ministries are fully cabled with functional Local area Networks (LANs) and interconnected with high-speed fiber connection commonly known as Government Common Core Network (GCCN). This has necessitated implementation of robust integrated financial systems, citizen information databases, websites, discussion forums, online feedback and complaints systems, email systems e.t.c. All this has been done with the aim of improving service delivery between Government ministries and their internal clients and the public. DLP is also among the major project under ICT Authority. The ICT Authority is mandated to oversee and maintain the implementation of all these projects.

DLP is mandated to entrench and equip the public primary schools with ICT infrastructure, developing capacity of education managers and integrate sustainable and Affordable and digital program in the Kenya education system.

Years down the line, DLP project is yet to be fully implemented. Various scholars and organizations have cited challenges associated to these. For instance, 99% of schools in Makueni County have being supplied and

installed with the digital learning devices which include tablets for class one pupils, a laptop for use by the teacher, a projector and remote internet connection devices. Many schools have however, not been using the devices and and so the devices have just been lying idle. Several challenges have been cited to this delay, like lack of electricity in the schools, trained staff, poor infrastructure within the schools, poor network coverage, among many others (KPMG report, 2017). This has called for various stakeholders within the ICT industry like the Ministry of Education, County Development Implementation coordination Committee (CDICC) and county commissioners to take charge in mitigating the various challenges that have been identified.

Several studies have been conducted, both globally and locally in an attempt to solve the challenges influencing ICT implementation by the Kenyan government.

Research Objectives

The study aimed at achieving the following objectives;

1. To determine the effect of ICT training on implementation of DLP in Makueni County, Kenya.
2. To establish the effect of funding on implementation of DLP in Makueni County,Kenya.
3. To evaluate the effect of ICT infrastructure on implementation of DLP in Makueni County, Kenya.
4. To find out the effect of ICT experience on implementation of DLP in Makueni County

Conceptual Framework

Conceptual framework is a set of broad ideas and principles taken for relevant fields of enquiry and used to structure a subsequent presentation (Biklem, 2003). Service delivery by the Kenyan government is the dependent variable of this study and it operationalizes ICT factors that formulate the independent variables. The relationship between the independent variables and the dependent variable is illustrated in the figure 1.

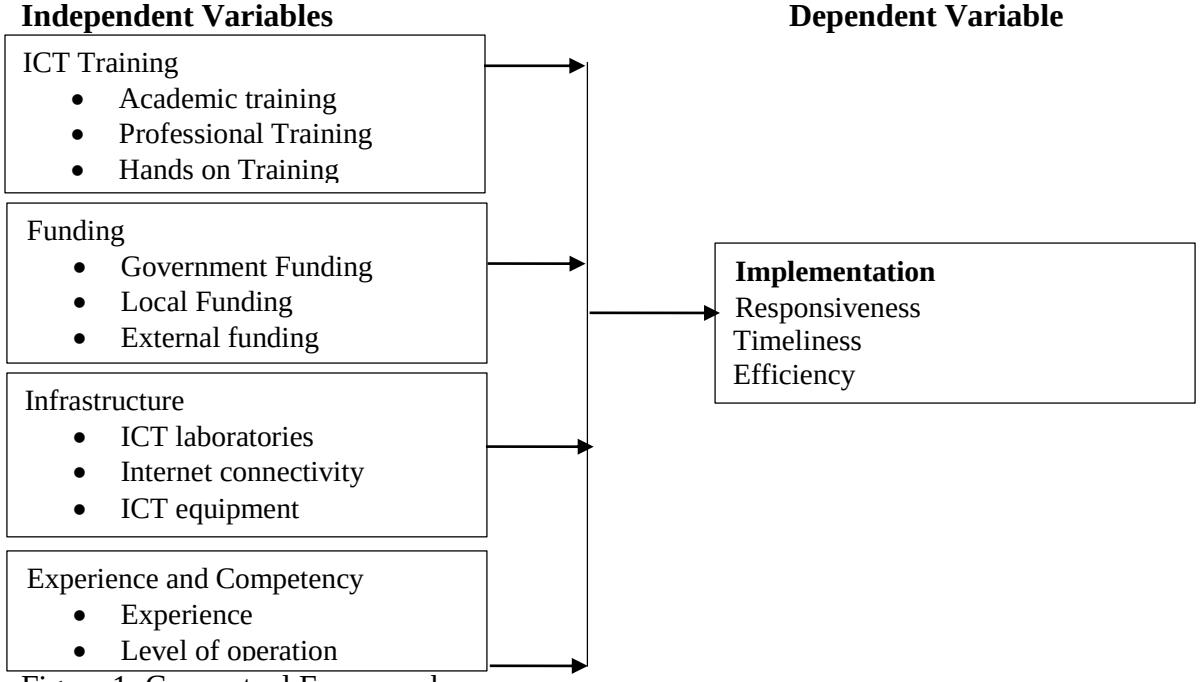

Figure 1: Conceptual Framework

II. RESEARCH METHODOLOGY

The research targeted 5 ICT directors, 20 ICT officers and 200 Presidential Digital Talent Participants placed in Makueni County. Based on study guidelines from Mugenda and Mugenda (1999) a study sample comprising of at least 30% of the sampling frame is deemed as acceptable as it allows for undertaking of a representative study, which was then used to representation that target population of 104. A survey questionnaire was used in the collection of data from the study respondents. The data was analyzed quantitatively using the Statistical Package for the Social Sciences. The focus was mainly on descriptive statistics such as frequencies and percentages. Mean analysis was also necessary while correlation analysis was to help establish the relationship between ICT and service delivery. The analyzed data was then then presented using table and graphs for ease of interpretation.

III. DATA ANALYSIS, PRESENTATION AND DISCUSSION

Pilot Study

The study applied Cronbach's alpha coefficient of 0.70 or higher to establish how reliable the data collection instrument was. The four variables were dependable in line with Table 1. This was caused by Cronbach's alpha surpassing the agreed onset of 0.7. It was found that the values in the Content Validity Index were above the set mark of 0.76. Therefore, it was concluded that the questionnaire was valid and reliable for data collection.

Table 1. Reliability of Test Results

Scale	Cronbach's Alpha	CVI	Remarks
ICT training	.764	.832	Accepted
Funding	.853	.789	Accepted
Infrastructure	.938	.861	Accepted
Competency	.854	.789	Accepted

ICT Training

Various competencies of workers were also examined in order to establish how training and ownership of such competencies could influence employee's adoption and implementation of ICT. To this end, the researcher would establish the kind of training skill that should be impacted in the workers in order to enhance or boost ICT effective usage in the schools within Makueni county. The results showed that only 1% of the workers had computer science skills, 6.7% had ICT operation training, 1.9% had taken part in ICT training, 16.3% with IT training and 14.4% having competency in Information Management Systems (IMS). However, 8.7% of employees had training in Financial Management Systems (FMS), 1% had Library and Information Science skills while 5.8% had training in Environmental Studies. 1% of them had undergone Graphics Design training while 43.2% had undergone training on hardware maintenance. From the findings, it can therefore be noted that majority of the employees had no training on ICT field. This is depicted in table 2.

Table 2: ICT Training Competencies

	Frequency	Percentage	Cumulative Percentage
Computer Science	1	1.0	1.0
GIS	7	6.7	7.7
ICT	2	1.9	9.6

IT	17	16.3	26.0
IMS	15	14.4	40.4
FMS	9	8.7	49.0
Library and Information Science	1	1.0	50.0
Environmental Studies	6	5.8	55.8
Graphics Design	1	1.0	56.7
Hardware maintenance	45	43.2	63.5
Total	104	100.0	

ICT Usage

In order to attain the objectives of the study, the researcher required the respondents to give a personal opinion on some of the activities and steps that have been taken to enhance the usage of ICT by the DLP. Varied responses on personal contentions concerning the same were received. All the respondents agreed that at one point or the other, ICT is useful in their job; whether by making work easier or improving efficiency to client service.

In order to determine the effect of training on the use of ICT, the researcher sought to find out the activities that DLP undertake in order to enhance or promote the use of ICT through capacity building. 96.2% of the interviewed responded positively to the statement that DLP encourages its staff to use ICT in their work; 3.8% were not convinced about this. On the same note, it was reported by 65.4% of the interviewed employees that DLP also organizes specialized instructions on the use of ICT while 34.6% disputed this. In addition, it was agreed by 79.8% of the respondents that DLP provides guidance in ICT applications, 20.2% of them disagreed. As reported by 73.1% of the respondents, the management of DLP influences training for ICT users. 26.9% of them did not agree with this contention. However, it was among the objectives of the researcher to find out the influence of training on the use of ICT.

Table 3: ICT Usage

		Frequency	**Percentage**
ICT is useful in my job	Yes	104	100
	No	0	0.0
DLP encourages staff to use ICT	Yes	100	96.2
	No	4	3.8
DLP organizes specialized instruction on use of ICT	Yes	68	65.4
	No	36	34.6
Management influences training for ICT users	Yes	76	73.1
	No	28	26.9
I find learning to operate ICT easy	Yes	92	88.5
	No	12	11.5
I use ICT frequently	Yes	98	94.2
	No	6	5.8
DLP provides guidance in ICT applications	Yes	83	79.8
	No	21	20.2
The use of ICT can increase flexibility in job performance	Yes	103	99.0

	No	1	1.0
DLP has skilled users of ICT	Yes	88	84.6
	No	16	15.4
Monitoring and evaluation requires involvement of all concerned stakeholders in use of ICT	Yes	100	96.2
	No	4	3.8
Use of computers to carry out duties	Yes	17	16.3
	No	87	83.7

The attainment of this objective necessitated gathering of information concerning staff competency and frequency of use of computers. 88.5% of the respondents confirmed that they find the learning of ICT operation easy. This may be attributed to the quality of training the DLP offers its staff as well as the facilities available for the same. Therefore, 11.5% of the respondents do not find it easy. More-so, 103 out of the 104 staff interviewed affirm that the use of ICT can increase flexibility in job performance. This implies that the use of ICT is a good thing when it comes to improving the efficiency of service delivery in public primary schools Makueni county. Only one of them disagreed with this. 96.2% of the respondents agreed to the statement that monitoring and evaluation requires the involvement of all concerned stakeholders in the use of ICT while the rest did not agree. While 84.6% of the respondents affirmed that DLP had skilled users of ICT, 100% of the interviewed confessed that ICT is useful in their jobs. However, only 16.3% of them use computers in their duties and the rest (83.7%) do not use it at all. This is indicated in the following table 4.

Stakeholders involvement in ICT training

The researcher wanted to know the respondents' views on the involvement of all stakeholders in training of ICT activities. This was important in order to know if to include some or all stakeholders in an implementation activity. 3.8% had nothing to say, 7.7% strongly disagreed that they should all be included as 3.8% of them disagreed about this statement. 10.6% of these respondents fairly agreed on the importance of involving all stakeholders in an ICT implementation programme while 21.2% of them gave a positive opinion about this issue. From the findings majority of the respondents (52.9%) strongly asserted that the involvement of all stakeholders is critical in ensuring a successful implementation of ICT activities. The outcome is indicated in the following Table 5.

Table 5: Stakeholders involvement in implementation of ICT activities

	Frequency	**Percentage**	**Cumulative percentage**
None	4	3.8	3.8
Strongly disagree	8	7.7	11.5
Disagree	4	3.8	15.4
Fair	11	10.6	26.0
Agree	22	21.2	47.1
Strongly agree	55	52.9	100.0
Total	104	100	

Availability of adequate funding

Allocation of adequate funds for DLP Programme

The roles played by DLP in order to enhance computer use in the offices had also been researched on. The results would assist to determine whether DLP has adequate funds allocated for ICT use. In terms of DLP's provision of adequate funds for ICT use, results showed that 5.8% of the respondents said nothing concerning

the issue, 9.6% strongly disagreed, 18.3 .9% of them disagreed with the statement, 46.2% fairly agreed with it while 16.3% agreed that DLP provides adequate funding for use of ICT. Only 3.8% of them strongly agreed beyond no doubt that DLP is doing its fair part in funds provision for ICT adoption and use. Therefore, from the findings of the study, it can be said that majority of workers fairly agreed that DLP has adequate funds allocated for ICT use. This is shown in table 6.

Table 6: DLP allocates adequate funds for ICT

	Frequency	Percentage	Cumulative percentage
None	6	5.8	5.8
Strongly disagree	10	9.6	15.4
Disagree	19	18.3	33.7
Fair	48	46.2	79.8
Agree	17	16.3	96.2
Strongly agree	4	3.8	100.0
Total	104	100	

These findings are similar to those of Lelei (2007) who found out that the ICT goals could not always be realized as expected without adequate funding from the project sponsors.

Financial Support for DLP project

The researcher sort to know about availability of funds for ICT use. This would then be used to assess the availability of funds and the level of required funding in the premises. It was affirmed by 58.7% of the respondents that the organization receives funding as 27.9% of them said no to this statement. 13.5% of the respondents did not have an idea about funding for ICT use in the organization. The results are indicated in table 7 as follows

Table 7: DLP's financial support from donor projects

	Frequency	Percentage	Cumulative percentage
Yes	61	58.7	58.7
No	29	27.9	86.5
I don't Know	14	13.5	100
Total	104	100	

DLP is well funded with enough computers

The researcher wanted to know if the ICT unit in DLP is well funded. This was driven by the need to know if funding in the unit was adequate or posed as a challenge towards implementing service delivery. A good percentage fairly agreed (33.7%) that it was fully funded, 4.8% hardly said anything concerning it as 17.3% of the respondents strongly disagreed that the ICT unit is well funded in the organization. 26% of the people interviewed strongly agreed about the funding issue as 11.5% of them agreed. Table 8 demonstrates the results.

Table 8: Funding and facilities for ICT unit

	Frequency	Percentage	Cumulative percentage
None	5	4.8	4.8
Strongly disagree	18	17.3	22.1

Disagree	7	6.7	48.1
Fair	35	33.7	81.7
Agree	12	11.5	93.3
Strongly agree	27	26.0	100.0
Total	104	100	

ICT Infrastructure

Equipping DLP with ICT Laboratories

Need to check on the availability of ICT equipment in the office was also considered. This was meant to help the researcher to make deductions on whether inadequacy of the equipment could be the driver of the state of affairs as it pertains to ICT use in the office. It was found out that all the respondents answered this question, 8.4% strongly disagreed, 27.9% disagreed that the laboratories were well furnished while a better percentage (28.8%) agreeing fairly on this issue. 14.4% and 5.8% of the respondents agreed and strongly agreed respectively about the issue of ICT laboratory furnishing. This is shown in the following figure 9.

Table 9: furnishing DLP with ICT labs

	Frequency	**Percentage**	**Cumulative percentage**
None	0	0	0
Strongly disagree	8	8.4	8.4
Disagree	7	6.5	14.9
Fair	10	9.6	24.5
Agree	36	34.4	58.9
Strongly agree	43	41.1	100.0
Total	104	100	

Poor Internet Connectivity affects implementation of ICT

In view of the availability of ICT infrastructure, the researcher sort to know DLP efficiency by looking at how the internet connectivity responded in public primary schools within Makueni county. However, results depicted that 6.7% strongly disagreed about this as 7.6% of them disagreed on the same issue. There was fair consent from 4.8% of the respondents concerning the need of internet connectivity response. 20.2% agreed as 60.7% of them strongly agreed that connectivity affected the implementation of service delivery. The findings therefore demonstrated that majority of the respondents fairly agreed with excellence of internet connectivity response. This is shown in table 10.

Table 10: Response to Internet connectivity

	Frequency	**Percentage**	**Cumulative percentage**
None	0	0	0
Strongly disagree	7	6.7	6.7
Disagree	8	7.6	14.3
Fair	5	4.8	19.1
Agree	21	20.2	39.3
Strongly agree	63	60.7	100.0
Total	104	100	

Inadequate availability of ICT equipment in various schools

Inadequacy of ICT equipment affect implementation of ICT in service delivery. 60.7% strongly agreed while 20.2 agreed. 4.8% of the respondents stated that the inadequacy can fairly pose as a challenge while 7.6% and 6.7% disagreed and strongly dis agreed respectively.

This is in line with the literature of Akbaba (2006) who stated that general computer issues such as too few computers among other issues which could act as a barrier to ICT implementation.

Staff ICT competency

Computer applications competency

Apart from the mode of training through which the staff acquired their computer skills, the researcher sought to know the extent to which the staff understood relevant computer applications necessary for effective utilization of ICT in the parastatal. The respondents were therefore required to highlight the applications that they were familiar with. This would enable the researcher to know the level to which ICT technology is being utilized in the institution. Moreover, this knowledge was useful as part of the research to find out why some of these basic applications are not in use. From the findings, it was deduced that 101 out of 104 respondents interviewed had training in the MS Office suite. This constituted 97.1% of the respondents. MS Office is therefore the most important popular computer application in the institution.

At least 50% of the respondents are competent in page maker applications. Majority of the respondents confirmed not to be competent in, Cloud Computing (63.5%), IFMIS (71.2%), Programming (65.4%), and Desktop Publishing (58.7%). Table 11 indicates the proportions of the respondents with and without competence in the named computer applications.

Table 11: Computer Application competency

		Frequency	Percentage
MS Office	Yes	101	97.1
	No	3	2.9
Cloud Computing	Yes	38	36.5
	No	66	63.5
IFMIS	Yes	30	28.8
	No	74	71.2
Programming	Yes	36	34.6
	No	68	65.4
Desktop Publishing	Yes	43	41.3
	No	61	58.7

DLP staff competency

The researcher sort to find out whether the ICT staff in the organization were competent and qualified. The significance of this was that the findings would then link to the existing challenges facing implementation of the ICT on service delivery. This would serve as a basis for various ICT upgrading activities in the organization. Results showed that of all the interviewed respondents, 5.8% did not have anything to say and only 2.9% of them strongly disagreed about it. 9.6% disagreed on this issue as 17.3% of them fairly agreed about the qualification and competence of the staff. 43.3% of the respondents said yes to the question while 21.2% of

them strongly said that the staff was competent and qualified. From the findings of the study, it can be said that majority of the respondents agreed that, DLP ICT staff are competent and qualified to discharge their duties. The information was captured in the following table 12.

Table 12: DLP staff qualification and competency

	Frequency	Percentage	Cumulative percentage
None	6	5.8	5.8
Strongly disagree	3	2.9	8.7
Disagree	10	9.6	18.3
Fair	18	17.3	35.6
Agree	45	43.3	78.8
Strongly agree	22	21.2	100.0
Total	104	100	

Correlation Analysis

When two variables are connected in such a way that when one variable changes, the other variable changes also then the connection is called a correlation. The strength of a relationship between two variables is measured by calculating a correlation coefficient. The value of the correlation coefficient indicates to what extent the change found in one variable relates to change in another. There are several types of correlation coefficients, but this study adopted the Pearson Product-Moment Correlation Coefficient, or simply Pearson r.

The lowest value that the Pearson r can have is r = 0.00. This means there is Zero correlation, and would indicate that variable X and Y are not related to one another. The highest value that the Pearson r can have is r = 1.00. This indicates a Perfect correlation and would indicate that X and Y are completely related to one another in the sample. Pearson r values can be either positive or negative. A positive value indicates that increases in X correspond to increases in Y. A negative value indicates that increases in one variable are associated with decreases in the other variable. Table 13 depicts the results.

Table 13: Correlation matrix

		Training and usage	Funding	Infrastructure	Competency	Service delivery
Training and usage	Pearson Correlation	1				
	Sig. (2-tailed)					
	N	104				
Funding	Pearson Correlation	.840	1			
	Sig. (2-tailed)	.000				
	N	104	104			
Infrastructure	Pearson Correlation	.745	.890**	1		
	Sig. (2-tailed)	.000	.000			
	N	104	104	104		
Competency	Pearson Correlation	0.801**	.715**	.817**	1	
	Sig. (2-tailed)	.000	.001	.001		

	N	104	104	104	104	
Service delivery	Pearson Correlation	0.735**	.972**	.977**	0.803**	1
	Sig. (2-tailed)	.001	.000	.000	.001	
	N	104	104	104	104	104

**Correlation is significant at the 0.01 level (2-tailed).

Pearson's correlation analysis was done to determine the degree of relationship between ICT challenges (training and usage, funding, infrastructure, and competency) and implementation of service delivery at 99% confidence interval and 0.01 confidence level 2-tailed as shown in Table 13. A positive correlation exists between training & usage and training and funding at 0.840; training & usage and infrastructure at 0.745 and; training & usage and competency at 0.801. A positive correlation also exists between training & usage and service delivery at 0.735.

Funding has a positive correlation with infrastructure at 0.890 and; and competency at 0.715. A positive correlation also exists between funding and service delivery at 0.972. Highest correlation exists between funding and service delivery (0.972) whereas least correlation exists between competency and funding (0.715). This indicates that if funds are deployed appropriately, competency was insignificantly affect implementation of service delivery. Many ICT projects are challenged by inadequate resource allocation to implement them (Wangari, 2011).

The p-values for training & usage, funding, infrastructure and competency were 0.001, 0.000, 0.000 and 0.001 respectively as shown in Table 13. Therefore, funding and infrastructure were the most significant factors while training & usage and competency were the least significant factors since the lower the p-value, the more significant the variable.

Regression Analysis

Table 14: Regression coefficients

	Coefficients	Std. Error	t-statistic	p-value	Collinearity Statistics Tolerance	VIF
(Constant)	0.250	0.038	8.581	0.000		
Training & usage	0.254	0.040	6.489	0.000	0.423	2.064
Funding	0.316	0.045	6.801	0.000	0.486	2.377
Infrastructure	0.297	0.042	6.567	0.000	0.464	2.071
Competency	0.243	0.036	6.472	0.000	0.418	2.059

The fitted regression model is

$$Y = 0.250 + 0.254\ X_1 + 0.316X_4 + 0.297\ X_1 + 0.243X_4 + \varepsilon$$

Where; Y = service delivery, X1 = training & usage, X2 = funding, X3 = infrastructure, X4 = competency, ε = Error Term

Training & Usage

From table 14 the regression coefficient of training & usage was found to be 0.254. This value showed that holding other variables in the model constant, an increase in training & usage by one unit caused the service to increase by 0.254 units. The value of the coefficient was also positive. The positive effect showed that there was a positive relationship between training & usage and service delivery.

The coefficient was statistically significant with a t-statistic value of 6.489. The p-value was found to be 0.000 which showed the probability of getting a greater t-statistic than the one already achieved in the model. The variable was also found to be a less influential variable to funding and infrastructure on service delivery. The tolerance and variance inflated factor were found to be 0.423 and 2.064 respectively. The interpretation was that given that the tolerance value was below 0.5 and the variance inflated factor below 5 it thus showed that there was no collinearity problem.

Funding

From table 14 the regression coefficient of funding was found to be 0.316. This value showed that holding other variables in the model constant, an increase in training & usage by one unit caused the service to increase by 0.316 units. The value of the coefficient was also positive. The positive effect showed that there was a positive relationship between funding and service delivery.

The variable was also found to be the most influential variable on service delivery. The tolerance and variance inflated factor were found to be 0.486 and 2.377 respectively. The interpretation was that given that the tolerance value was below 0.5 and the variance inflated factor below 5 it thus showed that there was no collinearity problem.

Infrastructure

The regression coefficient of funding was found to be 0.297. This value showed that holding other variables in the model constant, an increase in infrastructure by one unit caused the service to increase by 0.297 units. The value of the coefficient was also positive. The positive effect showed that there was a positive relationship between infrastructure and service delivery.

Competency

The regression coefficient of funding was found to be 0.243. This value showed that holding other variables in the model constant, an increase in competency by one unit caused the service to increase by 0.243 units. The value of the coefficient was also positive. The positive effect showed that there was a positive relationship between competency and service delivery. The variable was found to be the least influential variable on service delivery.

Model Summary

Table 15: Model summary

R	R Square	Adjusted R Square	Std. Error of the Estimate
0.939[a]	0.884	0.880	0.29698342

From table 15 the values of the adjusted R square were 0.880. This value showed that there was a strong relationship between training & usage, funding, infrastructure, competency and service delivery. This indicated that the factors considered caused a variation of 0.880 on service delivery. The conclusion is that the four variables that were used only explained 88% of the variation on the dependent variable.

IV. SUMMARY AND CONCLUSION

Training and ICT usage is useful in most jobs. This is a fact that was brought out synonymously by all the respondents, pointing out that ICT can affect the service rendered by the government, the kind of performance people get, the efficiency and effectiveness of implementing ICT among other aspects. Thus, improved training in computer use reduces the challenges faced in service delivery.

Inadequate funding is the greatest impediment to the implementation and use of ICT in government services. It was as well found out that allocation of adequate funding for ICT poses as a challenge to improved usage among DLP when delivering the government services to public primary schools in Makueni county.

To address the third objective, the study sought to find out the effect of ICT infrastructure on service delivery. The study found out that respondents strongly agree with the statements that inadequately equipped DLP, poor internet connectivity and inadequate availability of ICT equipment are a challenge to service delivery

To address the fourth objective, it was established that lack of knowledge of diverse computer applications and staff competency among the DLP poses as a challenge towards service delivery.

Recommendation

Looking at training & usage, heads be trained on the programme so that they own it up and become champions of the same in their schools. It will also ensure continuity in cases where the teachers trained had tranfered. Currently, only about two teachers are trained per school and so if they were transferred to other schools, their former schools may have no one to champion the progrmme while one school may end up having more DLP trained teachers than others. Funding for DLP activities should be increased to enable it to adequately fulfill its mandate. DLP should also be given more control over donor funded projects so as to ensure projects implemented are aligned to its strategy of providing ICT enabled services to the public primary schools in Makueni county. More should be done to empower the county especially in matters of cyber security and virtualization technologies to adopt to emerging trends within the technology industry and new security threats that may cause destruction of existing ICT infrastructure and processes.

Education is also a key factor in ensuring that DLP successfully implements in strategies to meet the needs of delivering public services in a digital platform. Consultations with key stakeholders within the ICT industry is also necessary to see how best to incorporate ICT strategies into public service delivery platforms.

Finally, DLP should provide better remunerations to its staff to enable the project attract and retain highly skilled staff that have the skills and expertise to design, operate and maintain ICT infrastructure and processes.

Recommendation for further research

The study scope was narrowed to DLP in Makueni County, however, the challenges facing the implementation of ICT for service delivery is quite broad and extend to other counties. This therefore necessitates for a further study to establish whether there are similarities and differences in the challenges faced in Makueni County from other counties.

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