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## The Influence of Project Management Activities on ICT Adoption Among Secondary Schools in Kiambu County, Kenya

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### Abstract

Researchers have delved in the study on ICT (Information Communication and Technology) adoption in schools worldwide. Literatures based on social approaches specify that successful ICT adoption by teachers is reliant on dynamics such as attitude, resource provision, skills among others. This paper focuses on the Project management activities associated with the ICT adoption into instructional methods by Secondary school teachers in Thika, Kiambu County of Kenya, namely Teacher Motivation and Teacher Monitoring. The theoretical framework used was the Unified theory of Acceptance and Use of Technology (UTAUT) model for ICT, The Context, Input, Process, Product (CIPP) model for Evaluation of educational project and Joint Application Model (JAD) for Project management. The respondent for the survey based study were teachers from the schools that benefited from the Economic Stimulus Program - Information Communication and Technology (ESP-ICT) project.

Data for the research was carried out through administration of questionnaires to the teacher respondents. Findings discovered that the project had been unsuccessful in Teacher recognition; distribution of assignment for responsibility purposes and rewarding as Motivational tools. Further, no monitoring upgrades or indicators gave an assurance that the teachers had apprehended the initial laid down targets, consequently knowledge and communication was infrequent. The conclusion deduced from these findings was that ICT adoption by teachers was flawed and meticulous act out of the routine had to be taken in order to curtail some of the many challenges to its triumph. The paper therefore recommended the enrolment of a project manager, who would effectively drive the project through all the stages by engaging project management dimension that is characterized by planning, implementation, monitoring and organization. All these events guide to success in project attainment.

**Keywords:** Project Management, Economic Stimulus Programme (ESP), Information and Communication Technology (ICT), Adoption

### Introduction

With the global trend in technological advancement, many Government departments are rapidly following the private sector in embracing technological driven solutions. Kenya, as an economy and the education sector in particular has not been left behind. Sophisticated and

advanced technology is gaining preeminence. Education reform is occurring throughout the world and one of the tenets of the reform is the introduction and adoption of ICT in the education system, (Vikashkumar, 2005). He further affirms that technology can be an extremely useful tool in the handling of a number of the administrative tasks for both teachers and administrators.

The advancement of such a scientifically ambitious project by the Government required appropriate and well orchestrated planning for realization of the desired objective. Project Management can be the most appropriate resolution that would entail planning from the initial stage, coordination, implementation, monitoring and ultimate completion of the aforesaid venture.

### *Project Management*

Project management is the art and science of managing all aspects of the projects to achieve the project mission objective, within the specified time, budgeted cost, and pre-defined quality specification working efficiently, effectively, and ethically in the changing project environments, (Project Management Institute, 2004). It has always been practiced informally, but began to emerge as a distinct profession in the mid-20th century.

This methodical approach to planning guides project processes from start to finish. Project management can be applied to almost any type of project and is widely used to control the complex processes of software development projects. According to the Project Management Institute (2004), the processes are guided through its recurring elements that fall into five groups namely: initiation, planning, executing, controlling, and closing.

Project management knowledge draws on ten areas explicitly: Integration, cost, Human resources, Scope, Quality, Communications, Time, Procurement, Risk management and Stakeholders management. Project management brings a unique focus shaped by the goals, resources and schedule of each project.

### *Economic Stimulus Program /Package (ESP)*

An economic stimulus is an action taken by government to facilitate the economy during a recession with the hope that by money expenditure on state and federal infrastructure, the state would manage to provide jobs, and jump-start the failing economy.

The ESP was instigated by the Government of Kenya in the year 2009. The stimulus was made necessary by the decline in the economic growth rate from 7.1% in 2007 to 1.7% in 2009'. The rigorous, programme endeavored to stimulate economic activity, generate employment prospects, promote innovation in wealth-creation, and inspire entrepreneurship and sustenance for the building blocks that anchor a healthy, educated and innovative populace. The Programme was made into law in November 2009 by Parliament. The key objectives of ESP were to boost the country's economic recovery, invest in long term solutions to the challenges of food security, expand economic opportunities in rural areas for employment creation, promote regional development for equity and social stability, improve infrastructure and the quality education and healthcare, invest in the conservation of the environment, expand the access to, and build the ICT capacity to expand economic opportunities and accelerate economic growth.

The Ministry of Education generated a configuration and developed ICT assimilation guidebook to make certain that resources were expended to recipient institutions with procurement, installations and capacity building of teachers. To embark on these series of effort was an instructor identified by the District Education Boards (DEBs,) with precise set of credentials that

included: A teacher with craze in utilization, exhibition and implementation of innovative and emerging technologies, a good coach (or willing to train to be one) and a collaborator. One criterion used in recognizing the schools is what was referred to as “pockets of poverty”. The schools that benefited from ESP were in deficiency prone regions. They necessitated a nudge to improve their standards of operations as they could not entirely uphold themselves. The rationale for initiating ICT in schools was four (4) fold: Tech Innovations, Globalization of Economy and Information, Knowledge based economy and Society and Escalating Demand for Education.

#### *Project Management and ESP-ICT in Education System in Secondary Schools*

There are 4 policy documents that guide the Implementation of the ICT use in the Education sector in Kenya. These are: The Sessional Paper 1, of 2005 (A policy framework for Education and training), The National ICT Policy of 2006 (MOIC), The ICT Strategy for Education and Training of 2006 and The Kenya Vision 2030 (A blueprint for Kenya's development by 2030).

As a consequence of the economic deceleration brought about by dislocation of the masses after the 2007 general elections, a timely revitalization particularly in the education segment had to be given primacy by the Government.

The ICT rollout project was timely as this was a unique and temporary activity to heighten education slow down that had been impinged on in an overwhelming manner. The projects outcomes/ output would have a long term effect on education in the country. ICT is a mechanism to enhance the education and training of teachers. It is also a tool that teachers can utilize to for administrative purposes. Literacy in computer has been given priority. Some schools, especially the private ones as well as the National schools did offer computer as an examinable subject in their curriculum before the commencement of the ICT strategy by the Ministry of Education in Kenya. This point out the significance of ICT in Education and effective management boost the economy leading to independence as anticipated in the Economic Stimulus Programme.

#### **General Objective**

To investigate the influence of Project management activities on ICT adoption among Secondary schools in Kiambu County, Kenya

#### *Specific objectives*

1. To investigate the influence of Teacher Motivation on ICT adoption by Secondary School teachers in Kiambu County, Kenya
2. To establish the influence of Teacher Monitoring on ICT adoption by Secondary School teachers in Kiambu County, Kenya

#### *Research Questions*

This research has been guided by the following question.

3. How has Teacher Motivation influenced ICT adoption by Secondary School teachers in Kiambu County, Kenya
4. How has Teacher Monitoring influenced ICT adoption by Secondary School teachers in Kiambu County, Kenya

#### *Hypothesis*

The following Null hypotheses were developed:

H<sub>01</sub> There is no significant relationship between Motivation and ICT adoption by Teachers

H<sub>02</sub> There is no significant association between Monitoring and ICT adoption by Teachers

### Theoretical Framework

#### a) *Unified Theory of Acceptance and Use of Technology (UTAUT Model)*

The Unified Theory of Acceptance and Use of technology, UTAUT model (Venkatesh et al. 2003) was developed from technology acceptance model (TAM) by Davis, (1989) the latter having been derived from the reasoned action theory (TRA), a well-established model broadly used to explain user acceptance behavior (Lin and Wu, 2004). The theory was developed through a review and consolidation of the constructs of eight models that earlier research had employed to explain information systems usage behavior (theory of reasoned action, technology acceptance model, motivational model, theory of planned behavior, a combined theory of planned behavior/technology acceptance model, model of personal computer use, diffusion of innovations theory, and social cognitive theory)

A proposal by Venkatesh et al (2003) tested a unified information technology acceptance and use research model, called which explains user intentions to use an information system and subsequent usage behavior. The theory holds that four key constructs (performance expectancy, effort expectancy, social influence, and facilitating conditions) are direct determinants of usage intention and behavior. Gender, age, experience, and voluntariness of use are posited to moderate the impact of the four key constructs on usage intention and behavior.

Works done using UTAUT model are aimed at establishing the acceptance, hence adoption and usage of ICT in all dimensions. For a successful implementation of information technology applications, the attitude and a commitment of stakeholders should be considered.

#### b) *Joint application design (JAD)*

Joint Application Development (JAD) is a progression coordination style originally used for inventing a computer-based system, but can be relevant to any development procedure. It involves continuous interaction with the users and different designers of the system in development. It focuses on structured workshop sessions with participants consisting of a facilitator, end users, developers, observers, mediators and experts. JAD allows for a faster development process and minimizes errors at the same time and improves the quality of the final product. The approach enhances user participation, accelerates development, and improves the quality of specifications. The knowledge workers and IT specialists are able to resolve any difficulties or differences between the two parties regarding the new information system. The workshop follows a detailed agenda in order to guarantee that all uncertainties between parties are covered and to help prevent any miscommunications. The team is saved from wasting days or weeks in project definition gridlock. The nine (9) key steps in JAD process are identifying project objectives and limitations, critical success factors, defining project deliverables, the schedule of workshop activities, selecting the participants, preparing the workshop material, organizing workshop activities and exercises, preparing, informing, educating the workshop participants and coordinating workshop logistic. The sessions act as management processes that enhance efficiency for accomplishment of project deliverables. This can readily be applied for the ICT project.

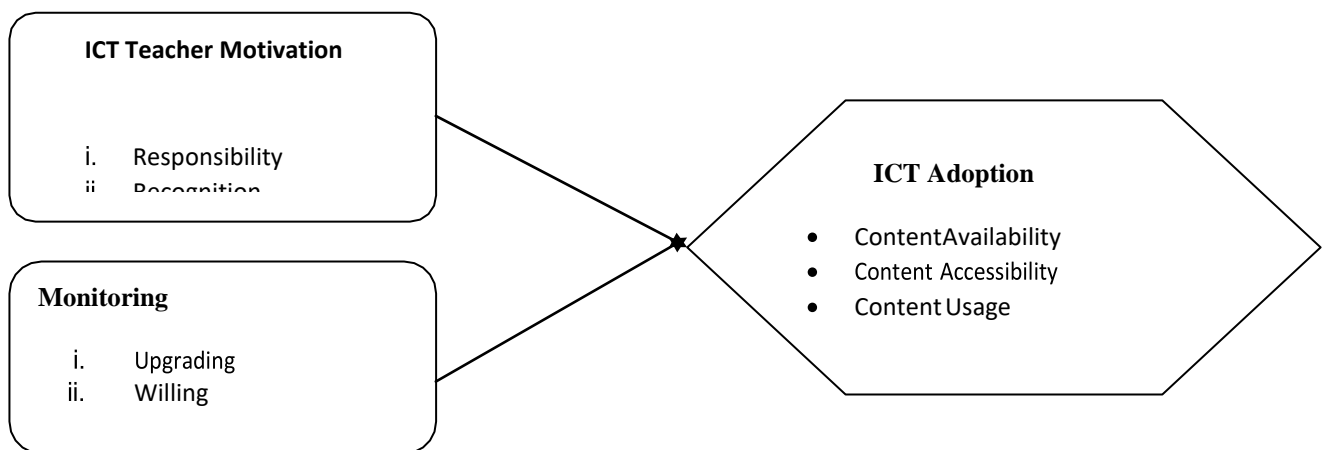


### c) CIPP Educational Model

The CIPP Model for evaluation is a comprehensive framework for guiding formative and summative evaluations of programs, projects, personnel, products, institutions, and systems. The pioneer of the Model was Daniel Stufflebeam in 1966 who intended it to be a framework to serve managers and administrators. The model has four aspects, Context, Input, Process and Product that are analyzed critically to evaluate the effectiveness of educational projects, Worthen, (2010). It explains aspects relating to the reason for the strategy, what was to be employed to meet goals intended, how, when, and who was to do what, and whether the product is right or appropriate. The study verified whether the intended objectives had been met through application of the resources, execution processes and what outcomes had been realized. The outcome or output in this case in point was the adoption of ICT by the teachers.

### Conceptual Framework

#### Project Management Activities



**Dependent Variable**

**Independent Variable**

### Literature Review

#### ICT Adoption by Teachers

In Kenya, the vision 2030 goal is that of mainstreaming information technology in education and equipping students with modern Information and Communication Technology (ICT) skills. Research conclusions undoubtedly put across the certainty of the affirmative impact ICT has had in the education sector. Coupled with these findings are the proposal geared to healthier ICT implementation and adoption. Teacher intensive facilitation and support teacher roles are required for the successful implementation of E learning, (Ayere et al., 2010). Discrepancies in ICT application were detected between NEPAD and NON NEPAD schools, this deduced from the actuality that NEPAD schools had been equipped with ICT infrastructure hence ICT skills inherent and their academic performance was far beyond the NON NEPAD schools were achieving. An increased investment strategy for improving and equipping the schools with ICT-literacy training facilities and resources for both teachers and students in Kenya was recommended by Mbabu (2012) so as to address psychological and technical skill readiness. This could have a positive impact on teachers' skills so as to reverse the slow rate of ICT adoption trend and improve the pace of diffusion in the secondary schools.

Teachers have a strong desire for the adoption of ICT into Education but they encounter many barriers to it, (Bingimlas, 2009). Despite all investments on ICT infrastructure, equipment and

professional development to improve education in many countries, ICT adoption and integration in teaching and learning have been limited, (Buabeng-Andoh, 2012). Factor inputs for any project progression ought to be availed to the implementers. Governments and policy makers in developing countries should actively drive infrastructure development in order to improve the general state of computing facilities.

#### *Content Availability*

According to a presentation by John Temba, Head ICT4, Kenya Institute of curriculum Development (KIRD) had developed content for use in both primary and Secondary (Science and Mathematics), an attestation that there is a big challenge of availing content for schools. A question raised was on whether teachers would be willing to participate in generating their own content. Contrasting findings by Florence (2010) confirm that teaching methodology encompassing delivery of content through electronic mode has been a dominant day in day out activity by most of the teachers. Prominent external factors that influence adoption of ICTs in schools are the availability of hardware and software, access to them, their reliability, quality and quantity (Cuckle & Clarke, 2002; Pelgrum, 2001).

#### *Content Accessibility*

Little access to internet and ICT are considered as the major barriers preventing teachers to integrate ICT into the curriculum, (Salehi & Salehi, 2012). Developing countries have to ensure that the technology that is adopted is easily accessible to the target group and also fulfills all the functions that are expected of it, Gulbahar & Guven (2010). In accessing content, there's a range of ICT options, from video conferencing through multimedia delivery to web sites - which can be used Jung, (2005). The researcher further argued that there has been increasing evidence that ICT may be able to provide more flexible and effective ways for lifelong professional development for today's teachers in order to meet the challenges teachers face today.

#### *Content Usage*

Usage refers to the application of factor resources for the attainment of project goals. Observation by Hamud (2011) signifies that career teachers are using ICTs content and infrastructure in more varied ways than the more experienced teachers. Teachers who are already regular users of ICT have confidence in using ICT; perceive it to be useful for their personal work and for their teaching and plan to extend their use further in the future, (Cox, 1999). Researchers Oyelaran-Oyeyinka & Adeya (2004) found that the low density of ICT infrastructure, congestion and costs are significant impediments to technology usage in Kenya. A study in Italy showed that not many teachers used the Web mainly to acquire further knowledge in their subject matter, to visit websites dealing with school and education, to download material for classroom use as assessment tests, tools for school activity management, lists of subject links, etc., and to access to encyclopaedias and databases (Midoro, 2005). The prevalence of this view is supported by observations that teachers continue to rely on old standbys such as lectures, textbook reading, and fill-in-the-worksheets practices that reduce students to passive recipients of information and fail to develop their thinking skills.

#### *Motivation of the ICT Teacher*

Motivation is concerned with the factors that influence people to behave in certain ways. Motivating other people is about getting them to move in the direction you want them to go in

order to achieve a result. People are motivated when they expect that a course of action is likely to lead to the attainment of a goal and a valued reward, Armstrong (2006). In order for the project team to remain motivated the project manager needs to pay close attention to the different varieties/ characteristics of people involved with the project, understand the team members' needs and wants; actively engage team members in the project throughout the various project stages, (Schmid & Adams, 2004).

A good remuneration strategy can make teachers stay innovative, current and relevant, hence alleviate and enhance levels of performance, (Muralidharan, 2011). Educational policy makers need to appreciate the need to motivate teachers to use ICTs in the learning process, (Gakuu & Kidombo, 2010). Teachers who are motivated and have strong commitments to their pupils' learning and their own professional development will evidently integrate computers more easily within their teaching.

#### *Monitoring of the ICT Teacher*

Monitoring and evaluation (M&E) of development activities provides government officials, development managers, and civil society with better means for learning from past experience, improving service delivery, planning and demonstrating results as part of accountability to key stakeholders. World Bank (2004) Research suggests that simply putting computers into schools is not enough to impact teaching and learning. That said, specific applications of ICT can positively impact student knowledge, skills and attitudes, as well as teaching practices, school innovation, and community services. According to Wagner (2005), dimensions of monitoring include assessment of student outcomes such as higher scores in school subjects or the learning of entirely new skills needed for a developing economy; teacher and classroom outcomes such as development of teachers' technology skills and knowledge of new pedagogical approaches, as well as improved attitudes toward teaching; and other outcomes such as increased innovativeness in schools and increased access of community members to adult education and literacy.

Several studies that assessed the impact of ICT on education were only able to say either that it did have an impact more than 20 years after ICTs were introduced in schools, solid evidence of their impact on student attainment is still lacking. Rodriguez et al (2010). Watson (1993); reasons for this included the mismatch between the methods used to measure the effects and the type of learning promoted, the absence of information regarding the specific types of ICT used, and the scarce attention paid to the monitoring and evaluation of ICT for Education (ICT4E) programs, Harrison et al (2009) or did not Dynarski et al (2009) without providing any information as to why ICT was or was not effective.

Additional sentiments by Rodriguez et al (2010) give further details that M&E scheme supports the intervention process by providing real-time information for decision making through the application of assessment instruments according to a monitoring plan. This enables intervention activities to be adjusted so as to ensure an adequate level of adoption.

#### **Methodology**

##### ***Research Design***

The research design employed in this study was descriptive survey using both quantitative and qualitative approaches for data collection, analysis and reporting. The design is supposed to study and establish a particular phenomenon at a particular time; in this respect, high school teachers' adoption of ICT in their teaching instructions.



*Population*

Population is the total collection of elements about which we want to make inferences, (Cooper and Schindler, 2009). The schools that benefited from the Government funded E learning project under the Economic Stimulus Programme in Thika District were 9 with a total teacher population of 180. This is as illustrated in Table 3.2

**Table 3.2: Population of Thika District ESP Beneficiaries**

<b>Division</b>	<b>Name of the Schools</b>	<b>No. of teachers</b>
Thika West	1. Broadway High School	24
Thika East	2. Munyu Girls High School	21
	3. Munyu Mixed school	20
	4. Ithanga High School	18
	5. Ngoliba High School	21
Ruiru	6. Ruiru Girls High School	20
	7. Ruiru Mixed School	28
	8. Kitamaiyu Secondary School	11
	9. Juja Farm Secondary school	17
<b>Total</b>		<b>180</b>

*Sampling Technique*

The population of 180 teachers was from the 9 schools that benefited from the ESP project. In order to pick a representative sample from these schools, stratified sampling technique was used. Out of the 9 schools, a random sample was taken from each teaching department proportional to its size.

*Data Collecting Instrument and Data Collecting Procedure*

This study was carried out by the use of structured questionnaires for the teachers. The researcher was able to gather data over a large sample and translate the research objectives into specific questions and answers as well as provide the necessary data for hypothesis testing. The use of a questionnaire also guaranteed anonymity to the subjects and hence encouraged respondents to give honest responses.

*Reliability Test*

Cronbach's Alpha was applied as a tool to measure of internal consistency of the constructs. This instrument was extensively applied to authenticate the reliability of the constructs with an Alpha value of 0.7 as the threshold.

**Findings*****ICT Adoption by Teachers***

Teacher's activities showing adoption of ICT in their classroom tutoring was measured using likert scale where indication of the activities they undertake was on whether they do them very frequently, frequently, occasionally, rarely or never. Analysis from Table 4.4 shows that 40.3% of the teachers have never used the backup modem to surf the internet for information whereas only 2.8% frequently use it. This further explains why 44.6% rarely or have never

surfing the internet leading to a greater percentage of the respondents not using the projector or availing content in soft form from the internet.

Cronbach's Alpha value for the seven aggregated items was 0.858. Table 4.1 exemplifies lack of usage of the availed gadgets, a resultant indication that the adoption of ICT is wanting. 38.3% of the teachers frequently access the printer and an almost balance of the same i.e. 38.9% have never or rarely access it. Reasons for this phenomenon were many and divergent as some of these teachers had a phobia of failure as they employed ICT bearing in mind that this had been a new venture in the teaching fraternity.

***Table 4.1: Teachers Activities showing Adoption of ICT in their Classroom Instructions***

ICT Activity	VF	F	O	R	VR
<b>Availing content</b>					
Downloading soft content	5.4	14.9	23.0	31.1	25.7
Surfing internet	4.1	16.2	35.1	25.7	18.9
<b>Accessing</b>					
Accessing computer	6.8	16.2	18.9	36.5	21.6
Accessing printer	6.9	31.9	22.2	22.2	16.7
Technical staff linkage	1.4	12.3	16.4	30.1	39.7
<b>Usage</b>					
Backup modem	2.8	11.1	20.8	25.0	40.3
Projector use	4.1	16.2	25.7	24.3	29.7

n=72

VF=Very frequently, F=Frequently, O=Occasionally, R= rarely and VR= Very rarely

#### ***Motivation and ICT Adoption by Teachers***

To probe how Motivation is done in the adoption of ICT by teachers, three aspects were tested. These were recognition, responsibility and rewards.

Table 4.2: Teachers' Response to Motivation

	SD	D	N	A	SA
	%	%	%	%	%
<b>Recognition</b>					
Recognizing steps	2.7	1.4	6.8	46.6	42.5
Much recognition	6.8	15.1	12.3	39.7	26.0
<b>Average</b>	<b>4.75</b>	<b>8.25</b>	<b>9.55</b>	<b>43.15</b>	<b>34.25</b>
<b>Responsibility</b>					
Assignment	1.4	1.4	9.7	54.2	33.3
ICT Headtasks	13.2	14.7	32.4	35.3	4.4
<b>Average</b>	<b>7.3</b>	<b>8.05</b>	<b>21.05</b>	<b>44.75</b>	<b>18.65</b>
<b>Rewards</b>					
Certification	2.8	5.6	12.5	45.8	33.3
<b>Average</b>	<b>2.8</b>	<b>5.6</b>	<b>12.5</b>	<b>45.8</b>	<b>33.3</b>

n=72

SD= Strongly disagree, D= Disagree, N= Neutral, A=Agree and SA= Strongly Agree

Table 4.2 clearly exemplify that 89.1 % of the respondents agreed that recognizing steps in ICT gave them morale to its adoption in teaching. Further, a greater percentage of 87.5% and 79.1% agreed that assignments and certification respectively can motivate though only 2.8% disagreed that some assignment on ICT would create a desire for them to know more. Sixty seven percent of the teacher respondents said that there has been little recognition for those who have adopted it, with 87.5% agreeing that tasks and assignments on ICT can enable them to adopt ICT.

In order show the effect of motivation on ICT adoption, the 5 items were aggregated to form one variable after satisfying the reliability test the 5 items (motivation index) gave a reliability alpha of 0.709 which is above 0.7, the recommended threshold. On average, 77.40% of the respondents felt that recognition is important in enabling teachers adopt ICT. A greater percentage still, of 63.40% also alleged that given responsibilities, teachers would have enthusiastically adopted ICT in their classroom instructions 79.1% with echoing that rewards would have boosted their adoption. Of more weight in this instance was the reward construct. Less % of the respondents (8.4) was of the view that rewards would not heighten their ICT adoption and a greater % of 21.05 unaware that responsibility would enhance it.

*H<sub>01</sub>: There is no significant relationship between Teacher Motivation and Teacher ICT Adoption*

Due to non-linearity nature of the computed variable, non-parametric correlation coefficient was preferred as a general measure of relationship between ICT integration and Motivation. Spearman rank correlation coefficient between motivation index and ICT integration index was found not to be significantly different from zero ( $r = -0.049$ ,  $p = 0.681$ ).

This meant that there was no significant relationship between teacher Motivation and teacher ICT adoption and therefore the Null hypothesis was accepted.

### Monitoring and ICT Adoption

One of the constructs considered under the monitoring aspects was the number of visits by the ICT champion to the respective schools. The champions were to train the teachers on how they were to incorporate E learning in their instructions and therefore a follow up was necessary to measure the results. Fifty one of the 73 respondents to this question said that the Champion has never

visited them at all, 8 said his visits are very rare, 9 had it that he is rare and 6 proposed of often visits as elaborated in Table 4.11

*Table 4.3: Visits by the ICT champion*

<b>Visits by the ICT champion</b>	<b>Frequency</b>
Often	6
Rarely	9
Very rarely	8
Not at all	51
<b>Total</b>	<b>74</b>

The outcome on Monitoring also advanced that 72.9% of the respondents were not aware of any indicators evident to show the adoption of ICT by teachers, 13.9% said the indicator was the number of lessons taught, 8.2% said the number of subjects taught and only 5.5% agreed on the number of students using ICT. Hence, no clear indicators had been set in place to guide the teachers. A mere 2.7% agreed on the time for all integration. 91.7% of the respondents agreed that there are no scheduled meetings to discuss ICT adoption issues and outcomes and 90% said that there have been no upgrading opportunities. No rewards had been accorded those that adopted ICT in their teaching, the more reason as to why much adoption had not taken place. No scheduled meetings to discuss the progress of the project had been well thought-out. It was also evident that no obvious indicators were put in place hence teachers were unacquainted with what they were ultimately targeting to accomplish. Over 86% of the respondents showed that there had been no indicators and therefore, questions raised as to what the Ministry was using as a Monitoring gauge.

**Table 4.4: Monitoring indicators of ICT Adoption**

	<b>No Count</b>	<b>%</b>	<b>Yes Count</b>	<b>%</b>	<b>Total Count</b>
Any reward	72	98.6	1	1.4	73
Scheduled meetings	66	91.7	6	8.3	72
Upgrading opportunities	63	90.0	7	10.0	70
<b>INDICATORS</b>					
None	20	27.4	53	72.6	73
No of lessons	62	86.1	10	13.9	72
No of ICT taught subjects	67	91.8	6	8.2	73
No of students using E learning	69	94.5	4	5.5	73
Time for all integration	71	97.3	2	2.7	73

The main elements of a project are time, scope and quality. All these need to be reflected upon and identified before engaging in the project activities.

**H<sub>03</sub>:** There is no significant relationship between Teacher Monitoring and ICT Adoption by the Teachers

The Spearman's correlation index between ICT adoption and Monitoring index was not significant ( $r=0.178$ ,  $p=0.132$ ). The  $p$  value is greater than 0.05 indicating that there is no

relationship between monitoring and ICT Integration teacher hence acceptance of the hypothesis.

However, major inconsistency was noted in Monitoring regard to gender as deduced from findings in Table 4.5 below that shows the relationship between teacher Motivation and Monitoring and ICT adoption.

Table 4.5: Correlations between Project management activities and ICT adoption by gender

Gender		Teacher motivation	Teacher monitoring
Females	r	-.192	.494
	p	.224	.001
Males	r	-.108	-.179
	p	.570	.345

The correlations results indicate that, ICT adoption into teaching is directly proportional to level of monitoring among female teachers ( $r=0.494$ ,  $p=0.001$ ) while this is not the case with male teachers ( $r=-0.179$ ,  $p=0.345$ ). The level of ICT integration into teaching and level of motivation are unrelated for both males ( $r=-0.108$ ,  $p=0.570$ ) and female teachers ( $r=-0.192$ ,  $p=0.224$ ).

It is vital to monitor the adoption of ICTs in Education particularly in the teaching and learning process since these are the pillars of education as deduced from by Aboko, (2013). Several studies that assessed the impact of ICT on education were only able to say either that it did have an impact more than 20 years after ICTs were introduced in schools, solid evidence of their impact on student attainment is still lacking. On upgrades, Wagner (2005), posited that dimensions of monitoring include assessment of teachers and student outcomes such as higher scores in school subjects or the learning of entirely new skills needed for a developing economy; teacher and classroom outcomes such as development of teachers' technology skills and knowledge of new pedagogical approaches, as well as improved attitudes toward teaching; and other outcomes such as increased innovativeness in schools and increased access of community members to adult education and literacy.

## Summary and Conclusions

### *Motivation and ICT Adoption*

The negative correlation meant that the presence or absence of motivation could not determine teachers' adoption of ICT. It was interesting that practically, this was the case though the teachers had strongly shown how these variables had a direct relationship. It did not add up to say then that additional assignment for teachers would positively impact on their ICT adoption. This was depicted from their sentiment in the questionnaire of bountiful workload to accomplish as part of syllabus coverage. Perhaps with them being delegated responsibility coupled with power, their negative perception could have been inverted as shown in that ICT heads were aggressive in accomplishing tasks assigned to them. Alternatively, certification for any IT charge undertaken may perhaps be the best option as not all could be elevated and promoted to serve as the heads of the department. Certification is valuable, especially in regard to the global trend for ICT literacy as requirement for job interviews.

### *Monitoring and ICT Adoption*

Majority of the teachers had never been rewarded for adopting ICT. Reflection from a bulk of the respondents also signified that the ICT champion had never checked on the progress in use of ICT in teaching since its commencement. The school managements had had no scheduled meetings,



upgrading opportunities and structured forums. Apart from a few indicators in regard to the number of lessons taught, number of teaching subjects taught using ICT, number of students using E content freely and time when all lessons should have integrated ICT, teachers had no idea of the communicated performance indicators that were to show that ICT had been fully adopted. There was no relationship between monitoring and ICT adoption by the teachers.

### Recommendations

The study recommended that a project manager be engaged in the Government roll out project of ICT adoption by teachers in schools. Only then could all the challenges conversed be dealt with competently. Project management allows for excellent organization and tracking of activities, better control and use of resources, reduced complexities of inter related tasks hence enhanced and more efficient time utilization, better measurement of output and early identification of problems and quick solutions to them.

Clear cut indicators of the expected outcomes of the success of the project need to be relayed to the teachers. There is need for evaluation of the project at every stage and follow ups be undertaken to verify any challenges so that they can be dealt with at an early stage.

Proper sustainability plans for the project are obligatory for stretched flourishing project results. Other recommendations from the respondents were; Provision of wireless internet connection such as WIFI, rewards for the teacher who practises ICT to prompt him/her to be positive, refresher courses to be to spell and equip the teachers, awareness campaigns as concerns development of the ICT methodology and new trends concerning ICT in the market, creation of an ICT mood in the schools to ensure that all stakeholders own the project, ICT to be made more teacher friendly through approach and appropriate measures to attract the teaching fraternity be undertaken, more benchmarking journeys to be planned and act as educational trips for assessment purposes and making provision in the timetable for ICT lessons per subject and integration of the same in all the subjects.

### Recommendation for Further Studies

Owing to the ineffective monitoring system as outlaid by the respondents lack of knowledge of how they were to measure their performance index, the study proposes a research undertaking on the Governments monitoring facet for the ESP -ICT educational project. The monitoring should integrate all dimensions of evaluations and Monitoring of projects.

The study additionally proposes a comprehensive analytical assessment of ICT adoption on gender basis to discover the discrepancies between males and females in their adoption of ICT in the teaching fraternity.

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