

**E- LEARNING IMPLEMENTATION AND PERFORMANCE OF INTERNATIONAL  
SCHOOLS IN NAIROBI CITY COUNTY KENYA**

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## DECLARATION

This project is my original work and has not been presented for a degree in any other University.

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## **DEDICATION**

This project is dedicated to my family and friends for their support and inspiration during my study period.

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## OPERATIONAL DEFINITION OF TERMS

**Educational Technology:** Refers to the usage of technology in learning and teaching process.

**Electronic learning:** It is a system of learning built on formal teaching which uses electronic resource, computers and internet to impart knowledge.

**Implementation:** The process of putting a plan into effect/execution.

**Learner:** An individual or a person learning a skill or a subject

**Interaction:** An activity which occurs between two or more objects which have an effect upon each other

**Student-centred teaching:** This approach to teaching views students as active participant in their own learning and uses strategies where learning is more individualized than standardized, and such teaching practice assists students in developing higher-order reasoning and problem-solving skills.

**Performance:** The extent to which a student, teacher or institution has achieved their short or long-term educational goals.

**International School:** School located within Kenya but offering a foreign curriculum such as the British or American Curriculums.

## **LIST OF ABBREVIATIONS**

<b>CAI</b>	Computer-Assisted Instruction
<b>MoE</b>	Ministry of Education
<b>TAM</b>	Technology Acceptance Model
<b>IT</b>	Information Technology
<b>ICT</b>	Information Communication Technology
<b>TRA</b>	Theory of Reasoned Action
<b>RBV</b>	Resource Based View
<b>TPB</b>	Theory of Planned Behaviours
<b>CPS</b>	Classroom Performance Systems
<b>SPSS</b>	Statistical Package for Social Science

## ABSTRACT

E-learning is widely used in the education sector in nowadays; hence, it is essential to study the effects of technology implementation on performance of students. There are numerous studies about academic performance however; studies on e-learning in Kenya are minimal. This study sought to examine the association of e-learning implementation and performance of international schools in Nairobi. The specific objectives include; determining the effects of; technology readiness, teachers' technical competency, teacher experience and teachers attitude towards adoption of technology on performance of international school in Nairobi. The study used a descriptive research design. It collected information related to teachers' attitudes, opinions and views on the association of e-learning implementation and performance of international schools in Nairobi. The study targeted 480 teaching staff of the 15 mainstream International Schools in Nairobi. Stratified proportionate-random sampling technique was used in sample selection. The population was grouped into 7 strata related to their departments. From each stratum, simple random sampling was used to select 44.6% of the population of that stratum. Giving a total sample of 214, this represents 44.6% of the total population. Data collection was by use of semi-structured questionnaires. Content analysis, descriptive analysis and inferential analysis were employed. On learners' performance or school ranking the study revealed that learner performance is affected by implementation of technology and also that learner interaction with the teacher is affected by implementation of technology. Regarding technology readiness the study revealed that computer programs tend to take a simplistic method to mistakes and simply rewards precise responses and rejects incorrect responses and also that technological hardware has improved visual presentations in the classroom as well as enhanced the focus and concertation of learners. Regarding the experience of teachers, the study revealed that, experience in teaching influences the use of information communication technology in schools, further teacher experience on use of ICT in assisting students is a result of perceived ease of use of ICT in assisting students. The study also found that teaching attitude influences the successful introduction and execution of technology in school's program and also that if the attitude of teachers' towards the usage of technology in the education sector is positive then adoption and integration of technology in the education sector will be easy. The study recommends that schools' management should have differentiated teaching catering for weaker students that is enhanced with implementation of e-learning for better performance, they should ensure that there is enough hardware to facilitate smooth running in classrooms. The government should come up with strategies to train the teachers on technology and the school management should ensure their teachers undergo refresher courses on computers to equip them to teach the children. In addition, teachers should embrace integration of ICT into their teaching for the benefit of the learners and the management of the schools should ensure that the teachers have a better perception about teaching and learning.

# **CHAPTER ONE**

## **INTRODUCTION**

The study background based on the objective of the study, problem statement, study objectives, questions sought to be answered by the study, the importance of the study to different stakeholders and the limitations, delimitations and study scope is covered in this section.

### **1.1 Background of the Study**

Project administration involves initiation, planning, execution, control and monitoring the project progress to realize the set goals. Projects are temporary in nature; they are designed to generate new products or service to achieve the set objectives by adding value (Nokes & Sebastian, 2007). The process of e-learning implementation in a particular institution can be considered as a specific project.

According to Emerson and Taylor (2004) electronic learning is widely used in education all over the world. Therefore, it is important to determine effects of electronic learning on performance of learners. The research further notes that different teaching methods have diverse levels of success in relation to educational results. Smith and Hardaker (2000) established that learning using internet positively influences performance. On the other hand Johnson (2005) found a negative relationship between e-learning and performance. According to Anderson (2008), many global schools argue that the use of technology in learning is not an assurance of improvement in learning. Students who focus on courses administered through e-learning are highly focused on the process of learning therefore they

get great learning benefits. Therefore, the study expects to reveal a significant positive association between electronic learning and performance.

### **1.1.1 E-Learning Implementation**

Voogt & Knezek (2008) electronic learning implementation entails the integration of the current technology in learning which may involve learning without any form of mediation. This process of incorporating technology in the education system has been progressive for last 2-decades. The first online learning was recorded by Graziadei (1993) by use of virtual instructional classroom (VIS). Olatokun and Opesade (2008) e-learning involves teaching using the electronic methods; it includes distance-education and computer-based learning. E-learning is mostly used in universities, colleges and schools which focus on online learning to improve learning processes.

Saekow and Samson (2011) to ensure successful implementation of e-learning, the government in collaboration with learning organizations should examine whether they are ready to incorporate such technology. Introduction of e-learning has brought about changes in the education sector and the economy. It has brought about several projections; the economy is now changing to learning which is sustained by use of technology. Due to the introduction of ICT technology in the education sector there is need for reviewing the curriculum and education instructions. Lubis, Yunus, Lampoh, and Ishak (2011). Very soon electronic learning will be the most appropriate learning method used all over the world. The effects of technology on education also affect other sectors in the economy which are also required to adapt new technologies (Dutta & Osorio, 2012)

The government of Kenya has been working hard to incorporate e- learning in the education sector; however the implementation has been successful in only few learning institutions in the country. The education ministry MoEST partnering with Microsoft-corporation, Oracle-corporation and DSTV performed a pilot in several schools with an aim of integrating e-learning in the schools (NEPAD e-Commission, 2003). However a report by Ayere, Odera and Agak's (2010) about e-learning revealed that less than 10% of educational institutions provide computer lessons for their students. Kadzo (2011) the benefits of e-learning has forced the government to use its resources to incorporate electronic learning in the learning institutions in the country. A multimillion ESP-ICT project has been set up by the government to ensure the incorporation of e-learning. Successful implementation of the project depends on the government commitment and the education institutions willingness to use the technology. This study sought to establish the relationship between e- learning implementation and performance of international schools in Nairobi, Kenya.

### **1.1.2 Performance of International School**

Performance is the degree in which an institution, teacher or a student achieves long or short term learning objectives. In determining education quality the set objectives should be measured against the learning outcomes. Individuals seeking certain definite result rate education quality in terms of the rank which a learning institution attains. The institutions are ranked in relation to the behaviour, values, academic achievements, sporting power and success in music of their graduates. The comparison may be standard and may not include the opinions, values and wishes of the learners. According to UNESCO (2005) emphasis on the entire output features of learning programmes do not prevent the use of a value added approach that take variations in ability into consideration.

Learning institutions that have good performance achieve it through various interventions; the methods of teaching used are planned in accordance to science of participative culture and promotes enquiry spirit between learners. This promotes learning, self-confidence and reasoning hence good performance in examinations (Waudu & Ouya, 2010). Schools that do well understand that the available assessment systems for students is insufficient for the growth of competence and in gauging the diverse level of excellence realized by learners. School administrations promote the growth in physical infrastructure so as to develop an all-round learner. They also ensure proper utilization of the available resources. Laboratories and library are improved through the procurement of suitable and enough materials.

### **1.1.3 E-learning Implementation and Performance of International Schools**

Farrell (2007) electronic learning is currently being incorporated in education institutions for the purposes of teaching, administrative services and even research because of its importance. The efforts of the GOK to embrace technology led to the development of a policy on National-ICT (Jan, 2006) which aimed at improving Kenyans livelihoods through provision of affordable, reliable, efficient and easily accessible ICT facilities. MoIC (2006) the policy was developed so that to promote usage of ICT in learning institutions all over the country in order to improve the quality of education. Learning institutions should be prepared to incorporate the learning technology in their institutions and appreciate the benefits it brings on learning and teaching.

Electronic learning encompasses various procedures and applications intended to convey instructions using electronic ways. Electronic learning signals a big change in education and its effects on learning cannot be underrated. E-Learning is very essential and since it is an effective technique it should be incorporated in learning and teaching. Unlike the e-books which are used simultaneously, the high costs of textbooks in developing nations result in budget constraints on the government, parents and schools. E-Learning ensures that the learning resources are shared. Classes with many learners can be taught effectively using the e-Learning resources. Therefore it is important to adapt the modern learning methods.

Broadley (2012) the users of e-Learning platforms that are teachers, students require skills and knowledge to be able to use the platform. Apart from the necessary skills the willingness to use the technology is also important in the adoption. Alcock (2007) the implementation of e-learning requires psychology readiness, infrastructure and technical expertise. Important infrastructure for e-learning comprises digital contents, e-Learning materials, projectors, computers, and LAN and internet connection. This study seeks to establish the impact of educational technology on learner interactions in classroom management Kenya. International schools in Nairobi have been grappling with how to implement e-learning in their schools and if the process shall result in an improvement in their performance.

## **1.2 Statement of the Problem**

Hawkins (2002) education is very important and has always been important; however there is a lot of competition in the education in regards to the quality of education. Formerly, there was no e-Learning therefore those willing to pursue higher education faced great competition

when trying to secure the few chances that were available in the universities. Those who managed to secure the chances were sometimes required to go for a holiday since that was a traditional system of learning. The traditional system of education had the following features; few students could secure higher education chances and others could lose their jobs in the period in which they were studying.

The available literature shows that little research have been done on implementation process of eLearning and the contribution of learners, social-demographic, hours spent both online and offline and computer knowledge on academics performance. Coldeway (1986); Calvert, (1986); Garrison (1987); Kumar (2001) emphasized on the importance of a detailed approach, together with the experience of learners and the exclusive e-learning environmental aspects. Cookson (1989) noted that there is little literature about factors influencing e-learners academic performance. Kumar (2001) states that most research concentrated on demographic factors effects on performance.

Studies on academic performance have been conducted on conventional scholars; few studies have been done on electronic learning in the education sector in Kenya. Therefore it is important to study electronic learning and its importance on performance. This is important so as to improve performance in the education sector. This serves as the stirring reason to undertake this research to fill the research gap. This study sought to establish the relationship between e-learning implementation and performance of international schools in Nairobi, Kenya.

### **1.3 Objectives of the Study**

#### **1.3.1 General Objectives**

The general objective of the study was to establish the relationship between e- learning implementation and performance of international schools in Nairobi, Kenya.

#### **1.3.2 Specific Objectives**

The study was guided by the following specific objectives;

- i. To determine the effects of technology readiness on performance of international schools in Nairobi, Kenya
- ii. To establish the effects of teachers' technical competency on performance of international schools in Nairobi, Kenya
- iii. To determine the effect of teacher experience on performance of international schools in Nairobi, Kenya
- iv. To determine the effect of teachers' attitude towards adoption of technology on performance of international school in Nairobi, Kenya

### **1.4 Research Questions**

The study sought to answer the following research questions

- i. What are the effects of technology readiness on performance of international schools in Nairobi, Kenya?
- ii. To what extent does teacher's technical competency affect the performance of international schools in Nairobi, Kenya?

- iii. What are the effects of teacher experience on performance of international schools in Nairobi, Kenya?
- iv. To what extent does teacher's attitude towards adoption of technology affect the performance of international schools in Nairobi, Kenya?

### **1.5 Significance of the Study**

The study sought to establish the association of e- learning implementation and performance of international schools. This study enlightens the management of schools on effect of e- learning implementation on performance of international schools in Nairobi, Kenya. This may assist them in adoption of learning technologies in school to improve performance.

The findings of this study may assist policy makers in designing policies aimed at enhancing adoption of educational technology in schools with an aim of improving learner's schools performance. These policies may assist schools in Kenya in adoption of educational technology in order to enhance classroom management.

To future researchers and academicians the study may be a source of imminent studies as well as provide literature for other studies. This study may add to the body of knowledge on the relationship between e- learning implementation and performance of international schools in Nairobi, Kenya.

## **1.6 Scope of the Study**

This study sought to establish the relationship between e- learning implementation and performance of international schools in Nairobi, Kenya in terms of; learner performance, learner interaction and school ranking. The study was undertaken at the 15 mainstream International Schools based in Nairobi, Kenya. These provided a large enough sample whose results would be extrapolated to the other International schools in the country. The study used the questionnaire as the main data collection instruments.

## **1.7 Limitation of the Study**

Questionnaires were the data collection tools. Secondary information was obtained from annual organisation reports. The researcher had no control on the information filled in questionnaire by respondents. Respondents were hesitant to provide information needed for the study for fear that it could leak to their competitors. Data was collected for two weeks the time may not have been adequate. A clarification to the respondents about the study objective and it would be only for academic purpose was done by the researcher so as to enhance data collection. A research assistant was employed to assist in data collection due to time limited for collection of data.

## **1.8 Organisation of the Study**

The first chapter presents background information on the subject of research and cover statement of the problem, research objectives, research questions, and significance of the study. The chapter also covers other sections including limitations and delimitations of the study and the scope. In the background of the study the study reviews the key concepts and

how they relate to one another. The second chapter give an in-depth review of related literature. It is divided into theoretical review and empirical review. At the end of the chapter, a summary of the literature review and research gaps were outlined. A conceptual framework was developed. The third chapter shall outline the proposed research design, the target population, the sample design and procedures for data collection, analysis and presentation. Chapter four presents the data analysis, interpretations and presentation and Chapter five presents the summary, conclusions and recommendations.

## **CHAPTER TWO**

### **LITERATURE REVIEW**

#### **2.1 Introduction to Literature Review**

This chapter reviews the existing literature on the impact of educational technology on learner interactions in classroom management in Kenya. More specifically, the chapter captures the theoretical review, empirical review, summary of the research gaps and conceptual framework, as it seeks to examine the association between e-learning implementation and performance of international schools in Nairobi, Kenya.

#### **2.2 Theoretical Review**

The study objective was to establish the association of e-learning implementation and performance of international schools in Nairobi. It was based on the resource based view (RBV) of the firm, knowledge based view (KBV) of the firm, theory of planned behaviour (TPB) and technology acceptance model (TAM).

##### **2.2.1 Technology Acceptance Model**

TAM is used by many researchers who focus on IT to provide an understanding of adoption of information technology and the uses in firms. The model has been used diverse situations; for instance Davis *et al.*, (1989) to investigate acceptance of computer technologies; Gefen *et al.*, (2000a) shopping online; Wu *et al.*, (2007) computing by use of mobiles; Pavlou, (2003) electronic commerce; Carter and Bélanger (2005) electronic state services. Fishbein and Ajzen (1975) the theory foundation of TAM is founded on the theory of reasoned action TRA. Davis *et al.*, (1989) this model suggests that there are two beliefs which are very

essential in TA. They include supposed usefulness (PU) (“the degree to which a person believes that using a particular system would enhance his or her job performance”); supposed ease of use (PEOU) (“extent in which an individual trusts that the use of a certain system will be free from mental or physical efforts). PU and PEOU have an impact on a person’s attitude in regard to the use of a system, which further impacts the behaviour of using a certain system and finally determines the definite usage of a system. Nevertheless, external factors influencing PU and PEOU are not fully researched in technology acceptance model. An individual attitude does not reconcile PU and PEOU (Davis *et al.*, 1989). Carter and Bélanger (2005) the findings show that there is need to develop a technology acceptance model which excludes individual attitude to use the technology.

### **2.2.2 The Resource Based View of the Firm**

Resource based view theory is used to explain competitive advantages and outstanding performance among organizations. “A firm is said to have a competitive advantage when it is implementing a value-creating strategy not simultaneously being implemented by any current or potential competitors” (Barney, 1991). Bharadwaj *et al.*, (1993) competitiveness can be maintained if “the advantage resists erosion by competitor behaviour”.

The model shows the association of “... the firm’s key resources and the role of management in converting these resources into positions of sustainable competitive advantage, leading to superior performance in the marketplace” (Fahy’s, 2000). This model refers to an organization as distinctive collection of capabilities together with resources; some have certain features of values, duplication barriers and appropriateness.

Fahy (2000) this theory clarification on competitive benefits is different from other researchers in pursuing core reasons for outstanding organization performance. For instance, in reference to industry firm economic, economics rent comes from exterior factors like revolutionary innovations, industry structure, government intervention and collusive arrangements, while resource based view theory argues that the ownership of very essential resources, their proficient development and distribution are important elements which give firm opportunities to realize and withstand competitiveness.

### **2.2.3 The Knowledge Based View of the Firm**

Grant (2011) KBV of an organization provides additional of RBV theory and postulates that knowledge is an important resource. Knowledge is seen as a very important production factor which plays a big role in production in this developed economy. Knowledge is the main source of generation of economic fee. (Grant, 2011) the creation of economic worth encompasses two important procedures which are; generation of knowledge and its application in producing goods and services. Knowledge has several features they include; specialization (“can be increased through integration of activities such as learning-by-doing”), acquisition of knowledge and sharing knowledge. The main objective of integration is to increase activities coordination and cooperation. To achieve efficiency during the integration of knowledge a mechanism should be devised to economize learning. The Focus on the significance of productive routines, tasks and rules creates the core integration mechanisms.

#### **2.2.4 Theory of Planned Behaviour (TPB)**

TPB adds to the literature on reasoned action theory to explain the situations where people have minimal control on their behaviour, (Ajzen, 1985). Moreover, TPB forms a basis of behaviour attitudes and individual norms. Models founded on theory of planned behaviour are used in explaining various behaviour types. The application of the models to ICT services adoption provides the following concepts; actual use, behavioural attitudes, subjective norm, behavioural control and intention to use. Behavioural attitude and individual norm components are similar in the theory of planned behaviour and TRA. This model comprises behaviour control as a supposed paradigm. Supposed behavioural rheostat indicates core and peripheral behaviour limitations and is proportional to intention usage and definite usage. Accordingly the definite usage has a relationship with intention usage and PBC. Theory of planned behaviour is used in explaining adoption of various schemes as spread-sheets (Mathieson, 1991), computer supply centers (Taylor & Todd, 1995), recently, e-commerce services (Battacherjee, 2000). The subjective rule role in theory of planned behaviour is not clear.

#### **2.2.5 School Improvement Theory**

This theory was pioneered by Tonduer and Technological Pedagogical Content Knowledge (TPACK) framework (Tonduer, 2007). Enhancement of schools method to education modification represents long-term objectives of creating self-renewal education centres and emphasizes on the core role of schools to facilitate change and identify issues in the education centres (Tonduer, 2007). Clear objectives and strategies to guide innovation in education should be established at schools level. Additionally development of teams and

principals and teachers professionalism should be established. The schools should also have strong leaders, this is important for the uptake of innovation and guidance on changes (Tonduer, 2007).

Education practioners play critical roles in the improvement of schools. The beliefs, experiences, motivation, emotions, skills and knowledge of teachers are important factors for improvement of schools. The perception and action of teachers in relation to the development of new learning methods are impacted by their believes and knowledge. So, giving priority to education on teachers and the development of their professions are important during innovations like integration of ICT with an aim of improving instructions in the classroom and the quality of education (Williams, 2003).

According to TPACK, the integration of effective innovations in teaching particular subjects needs the knowledge and skills to discuss the associations of content, Technology and Pedagogy (Koehler, 2011). An education practioners who has the ability to convey the association shows a sign of capability dissimilar and large compared to expert's knowledge in certain disciplines. The framework has a composite association between pedagogy, innovation knowledge and content which creates an important firm structure for guiding teachers on what is required of them for effective technology integration. Teachers should have technology usage knowledge and skills, pedagogic and content knowledge in order to facilitate integration of ICT in learning (Grabe & Grabe, 2007).

### **2.2.6 Input-Output Theory/ Production Function Theory**

The study was directed by IOT/PFT education theory. According to PFT schools are perceived as organizations that acquire inputs “teachers, students, resources” and change the inputs to education outputs using particular processes. Several researchers have used the theory when trying to measure the role of diverse factors to output in education (Coleman *et al.*, 1966; Fuller, 1985). The PFT measure output “the achievement of students” through consistent attainment test score. Education is perceived as a service that changes inputs which are fixed in nature that is “persons” into persons having various attributes to assist them in coping with the society after completion of studies.

PFT explains the achievement of students as the outputs and they depend on the inputs which include resources for learning, teachers’ qualifications and adequacy, school language policies as well as the school administration. An education institution acquires inputs which include materials for instructions, students, teachers and resources needed for learning. Teaching and learning process occurs where skills in e-learning practices are disseminated to students. Teachers guide the process by using their professional and academic qualification, experience in teaching and policies on schools language to impact the usage of language by students and creation of precise attitudes in electronic learning and appropriate management of time.

## **2.3 Empirical Review**

### **2.3.1 The role of E-Learning implementation on Academic Performance**

Jaag (2006) the performance of students in economics and science has been a baffling question. In economics a model of value addition founded on education production function is used. The methodology evaluates effects of education input on performance of learners. Kozma (2005) the installation of computer technology in school does not guarantee improved performance there is a lot which needs to be done. There are certain ICT applications which can have a positive effect on learner's knowledge, attitudes, skills, innovation, society services and teaching activities.

Electronic learning implementation attitudes echoed by researchers and academicians lie between neutral and positive. Rosenberg, Grad and Matear, (2003) argued that electronic learning and traditional instruction methods are similarly effective. Cavanaugh (2001) stated that there is no a key distinction in school performances between the modern and traditional learning instructions. Mayer (2003) noted that a lot of literature reflects highly on the positive attitudes toward the effect of electronic learning. This research aims at determining electronic education implementation specifically focusing on factors of electronic learning (technological software, technological hardware, teacher experience and teacher attitude) effect on an individual's school performance.

According to Emerson and Taylor (2004) there is no enough literature to propose that the execution of various teaching styles might yield various success degrees; rated by use of results on academics. Various researches show that electronic learning positively influences performance (Smith & Hardaker, 2000). Electronic learning teaching strategy provides great

opportunities for scholars in the process of learning and contributes to scholars' performance. Electronic learning may be utilised to improve school performance, it should be tailored to the abilities of scholars (Rodgers, 2004). The researcher also notes that electronic learning improves performance because it is more students centred. However, this may also have a negative effect on performance because students may divert their attention from the main objective (Johnson, 2005).

Breuleux, Laferrière and Lamon (2002) the benefits of e-learning accrue through the provision of various novel potentials to students. This form of learning improves enrolment in schools because individual in different regions can access education, broadens education opportunities, easy access of learning resources and improvement of communication between students and teachers. Learners embracing e-learning show an improvement in time management, critical thinking, researching, using computers, learning independently, and problem-solving and creative thinking compared to learners in the conventional schools (Barker & Wendel, 2001). Yasin and Luberrisse (1998), the advantages of modern learning as compared to traditional learning was established in Mexican students Telesecundaria programs, the students were "substantially more likely than other groups to pass a final 9<sup>th</sup> grade examination" state managed; those studying chemistry through satellite courses and those learning how to read and mathematics through an interactive instructions in radio.

Barker and Wendel (2001) e-learning implementation is not always effective. Learners with language difficulties might have a disadvantage on heavy text online learning and the disciplines which need physical skill demonstration like foreign languages, music and

physical education cannot work well when using e-learning. In this case students using electronic learning demonstrate little improvement compared to conventional school. Technical disciplines are difficult to deliver using online learning platforms. Schollie (2001) the AOC did an evaluation of performance of students on end year examinations and established that amongst students in schools in the province virtual students marks in maths and sciences were poor compared to the performance of non-virtual students on the same subjects.

Provision of similar quality instructions for both online learning and classroom learning helps in achieving equal education levels for all students. To ensure equality among the delivery structures there has been documentation of the delivery systems. Proper usage of electronic learning can improve performance of students (Kearsley, 2000)

E Learning is developing when learning institutions are having challenges like insufficient resources, ineffective teaching methods and strategies, many students in one classroom, and the institution of new subjects in the curriculum. This poses a great challenge in the education sectors and leads to poor learner's performance.

### **2.3.2 Technology Readiness and Performance**

Roger (2003) this is assessed in relation to the available software and hardware. Hardware (scanners, network infrastructure, projectors, printers and computer system) is physical in nature while software (operating system) is technology information. Network infrastructures are LAN and internet connections. Akaslan and Law (2010) the speed and band-width of

internet connection should be enough to sustain e learning. It's essential to do an investigation on the degree in which the available institution ICT infrastructures' is able to sustain e learning. The resources for electronic education are needed in their precise digital layout with suitable degrees of interoperability, interactivity and reusability. KICD is usually responsible in the creation of contents however; learning institutions are required to come up with their content created from guidelines provided by KICD.

Errera, Patkin and Milgrom (200) due to the increased growth and accessibility of computer innovation, several computer programmes were established to guide individuals 'instructions and remedial. Computer based individual instruction system has several advantages "has no social-pressure; easy adaption on learning patterns" and cons "there is no interaction, lack of proper communication". Additionally the significance of computers motivate a great number of children and the increase in home-computers facilitate their use within and outside the school context.

Hativa (1988) the programmes installed in computers usually offer basic approaches to errors and accept the correct responses while the incorrect ones are rejected, they do not show how the mistakes occur. There are sophisticated programs nowadays which facilitate the diagnoses and interpretation of misconceptions; however, they might not consider certain interpretation and misinterpretation.

Computer programs interventions which offer children math-disabilities are small in number. It is worth noting that maths training meta-analysis and mediation studies show that computer

mediations are less progressive as compared to teachers' interventions (Kroesbergen & Van Luit's, 2003). The results are due to the differences in sampling; this does not imply that computer intervention is not important; they should not fully occupy the place for teachers' interventions. Electronic learning interventions have numerous forms of which some are highly effective. They serve different purposes that are to increase motivation and reduction of the effects on motor, emotional and communication difficulties.

McGraw Hill (2011) notes that learning is best done when there is active involvement of content and curriculum. There is a challenge for teachers in the development of curriculum which is empirical in nature and ensures students engagement. This leads to high levels of student engagement and motivation. Computer-based strategy assists learners to establish high-order thoughts and develop skills for problem solving. Learner's participation promotes the drawing of analogies, data analyses, infer-relationships and predicts outcomes. E learning has an effect on the attitude of students about subject-matter, technology and instructions. Codde (2000) observed that poor performing students are concentrating much in learning and they are improving. In Kenya Kulik (2003) while comparing the use of computer in a physics and a situation where there is no computer found that learners using computers understood physics concepts more and had positive attitudes towards learning physics.

### **2.3.3 Teachers Technical Competency and performance**

According to Boakye & Banini (2008) prior experience in IT is essential for teachers for successful implementation of e learning programs. The techniques of teaching are as a result of experiences, schooling and training. It would be unreasonable to think that teachers may

change their teaching methods if they are not introduced to training to learn the integration of IT in learning.

The features of teachers important to influence the performance of learners in electronic learning include; technology control, attitude and teaching methods (Webster & Hackley, 1997). The factors are important in identifying suitable instructors for e learning implementation. The role of teachers in classroom learning is similar to the role of teachers in online learning (Entonado, 2009). Instructors are required to integrate technology in education institution and ensure that there are available resources to enable the use of the technology. McFadzean (2001) in e learning implementation traditional learning skills are to be modified to fit in the electronic learning environment. For effective implementation of electronic education the teachers need to have key competencies in the area. The competence of teachers on ICT can be determined through; pedagogical components knowledge, ICT learning dimensions awareness and possession of the necessary IT skills (Awouters & Jans, 2009). Electronic learning has high demands and allows learners to do experiments in order to understand the technology. Electronic learning training must encompass basic skills and knowledge to operate the computer hardware and software.

#### **2.3.4 Teachers Experience and Performance**

According to Niederhauser and Stoddart (2001) teacher's experience on delivery has no effect on usage of computer in learning. On the other hand Wong and Li (2008) noted that teachers' experience have an effect on use of electronic learning. Weiner (2000) noted that the experience of teachers is correlated to technology usage. The research found that

effective computer usage had a relationship with technology levels of comfort and liberty to shape instructions to teacher's supposed student needs. Zhao, Pugh, Sheldon & Byers (2002) stated that teachers with experience are reluctant to incorporate IT in teaching. Teacher experience on use of ICT in assisting student is a result of PEOU of ICT in assisting student, PEOU helps in assisting teacher's acceptance of ICT in learning, this is the insight about the degree of efforts required to use a particular system, this is acquired through experience.

Teachers experienced in the use of technology have the capability of changing time as well as space dynamics. Technology assists learners to do tasks independently and provides teachers with an opportunity to deal with small students group. Evaluation technology assists teachers to identify learner's strength and weakness to improve the teaching methods. The availability of digital methods of keeping records, access to LAN to connect with colleagues, parents and administrators more time is used in teaching. It is important to modify teaching so that to incorporate IT effectively. E Learning is a system, classroom reform, and community catalyst since it creates opportunities of changing from teacher-centred to student-centred learning. It also increases pedagogical knowledge of instructors. E learning effect on teachers improves learning hence benefiting the students since it focuses on individual needs and offers various strategies on curriculum and assessments to increase the capabilities of students. Obstacles of teachers' experience include; lack of skills, lack of confidence, insufficient time and inability to determine important IT tools.

### **2.3.5 Teacher's Attitude and Performance**

Teacher's support and attitudes determines successful initiation and implementation of education technology. If teachers suppose that technology programmes are not meeting students as well as their needs, there will be challenges in the integration of technology (Zeni, 2008). Positive teacher's attitudes on technology use have a positive impact on incorporation of teaching and learning in schools. Attitude of the teacher is affected by the perceived usefulness of ICT in learning, this is the degree to which the teacher believes in using ICT to assist student and believes that it will enhance his/her job performance. Teacher attitude and beliefs about ICT in learning to an extent influence their participation in ICT (Vahey & Crawford, 2002). Teachers with a positive attitude towards the integration of ICT tend to; use a more constructivist approach to teaching feel more empowered in their classrooms and spend less time lecturing.

### **2.4 Summary of Literature Review and Research Gaps**

Few instructors succeed during the integration of new technology in learning. Hence it is "critical that...working environments be supportive" (Dwyer, Ringstaff, & Sandholtz, 2010b). The teachers who pioneered educational technology had a vision of a time when learners will use computers to access internet through LAN with big screens with multimedia ability installed in classrooms (Stuebing, Celsi, & Cousineau, 2004).

The usage of technology argument is a continuous process of learning. A large part of education is dependent on technology (Mellon, 2006). Findings of association between technology and its effectiveness in learning were questioned by (Clark, 1994; Garcia, 2000).

Quantitative approaches had not been used appropriately in ascertaining effectiveness of electronic learning (Anglin & Morrison, 2000; Diaz, 2000; Joy & Garcia, 2000; Saba, 2000). Media cannot affect students teaching (Clark, 1994). A study by Joy and Garcia (2000) revealed that there was no important difference in learner education between technology based and conventional teaching methods.

Some researchers have the opinion that electronic learning has a positive effect on learning. Leach (2005) investigated usage of IT in scholars learning experience, on universities and online, e-mails, web-page, chat-room, software presentations, hybrid-classes and electronic books. According to the researcher there is minimal literature on effects of technology on learning.

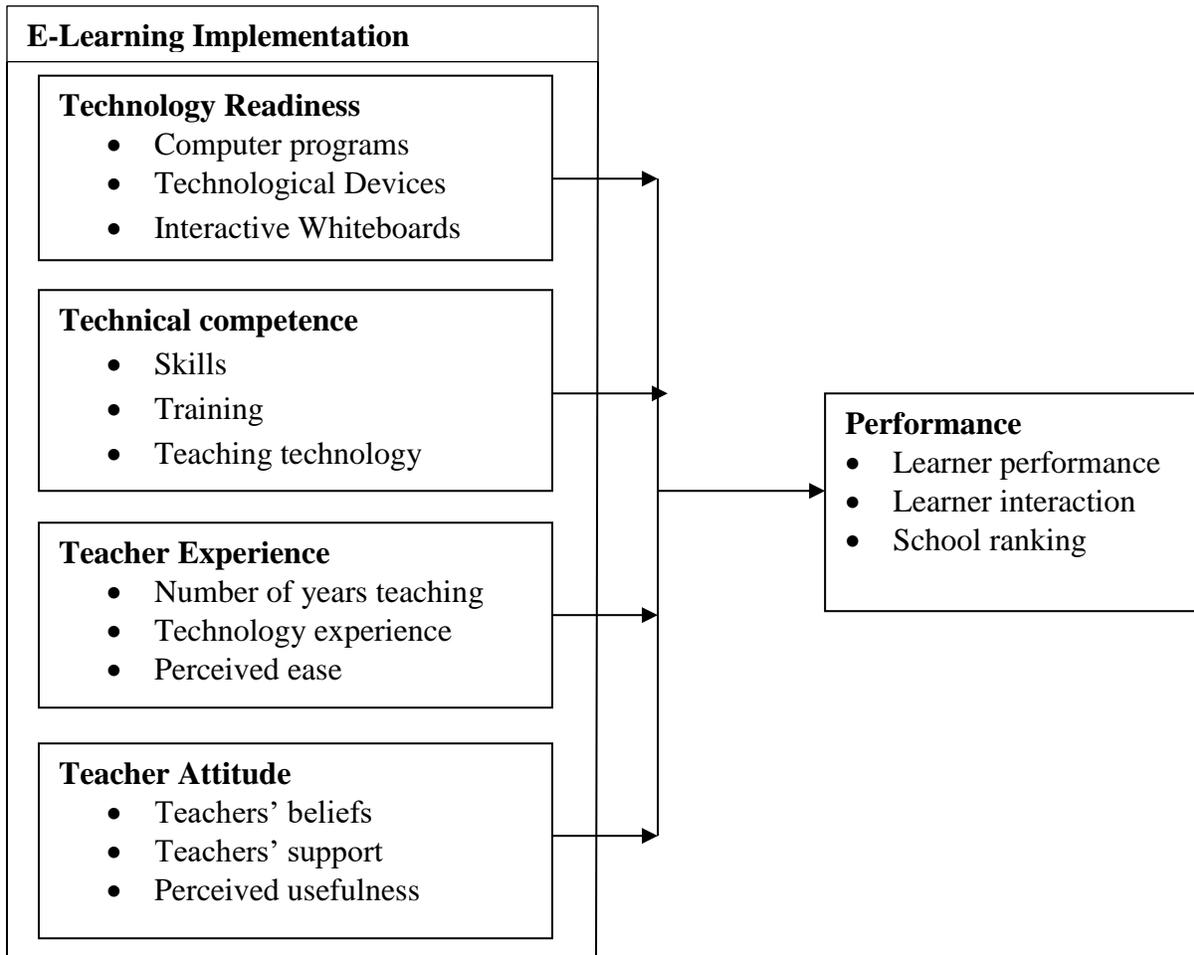
There are numerous education practices and interventions, the establishment of the use of computer on student's performance is a challenge to ascertain and compute because the association might be contingent on how the technology is used as well as on how achievement is defined and measured. Many studies have concentrated on student achievement in one or two subjects, mostly maths and the sciences. This study sought to fill the present study gap by establishing the association between e- learning implementation and performance of international schools in Kenya.

## **2.5 Conceptual Framework**

The conceptual framework shows the association between the study variables. It is as presented in figure 2.1

**Independent Variable**

**Dependent Variable**



**Figure 2.1: Conceptual framework**

**Source: Author (2017)**

## **CHAPTER THREE**

### **RESEARCH METHODOLOGY**

#### **3.1 Introduction**

The methodology used to collect data is presented in this section. It includes the research design, targeted population, and sampling, procedures for data collection, pilot testing, analysis and presentation of data.

#### **3.2 Research Design**

The descriptive research design was used in the study; the study population was Teaching Staff. This design was adopted because the study sought to determine the relationship of study variables. The method facilitated the production of quantitative data from the respondents.

#### **3.3 Target Population**

Targeted population was 480 teaching Staff of the 15 mainstream International Schools in Nairobi.

#### **3.4 Sampling Design**

##### **3.4.1 Sampling Frame**

Sampling frame will be the list of all the respondents working with 480 teaching Staff of the 15 mainstream International Schools in Nairobi, from where the respondents will be selected. The study selected a sample of 214 teaching staff from the 15 mainstream International Schools in Nairobi Fisher, Laing and Stoeckel (1983) formula.

$$n = Z^2 p \cdot q \frac{N}{e^2(N - 1) + Z^2 p \cdot q}$$

Where n= the required sample size

P = proportion of population with the required characteristics of the study

Q = proportion of population without the required characteristics of the study (1-P)

N= Total population

e = accuracy level required. Standard error = 5%

Z= Z value at the level of confidence of 95% = 1.96

$$n = 0.9604(480) / (1.1975 + 0.9604)$$

$$n = 460.992 / 2.1579 = 213.6$$

$$n = 214$$

### 3.4.2 Sampling Techniques

Sample of 30% is appropriate (Mugenda & Mugenda, 2003). Ngechu (2004) stresses on the significance of choosing an illustrative sample through a sample frame. The study sample was selected from the population frame using Stratified proportionate random sampling technique. This technique produces estimations about the all population with accuracy and guarantees an illustrative sample obtained from the identical population (Deming, 1990)

The population was convened into 7 strata based on their departments i.e. Mathematics, English and Literature, Sciences, Humanities, Modern Foreign Languages, Physical education and Creative Technical and Vocational. Simple random sampling was used in each stratum to select 44.6% of the population of that stratum. Giving a total sample of 214, this represents 44.6% of the total population. Simple random sampling increases the precision of

any estimation methods used. The numbers selected from each stratum is presented in Table 4.1

**Table 3.1: Seven Stratums and the number of respondents selected from each.**

<b>Stratum</b>	<b>Population</b>	<b>Respondents</b>	<b>Sample</b>
Mathematics	112	50	44.6%
English and Literature	115	51	44.6%
Sciences	80	36	44.6%
Humanities	57	25	44.6%
Modern Foreign Languages	40	18	44.6%
Physical education	39	17	44.6%
Creative Technical and Vocational	37	17	44.6%
<b>Total</b>	<b>480</b>	<b>214</b>	

### **3.5 Data Collection Procedures**

Questionnaires were used in data collection. They were semi-structured, Orotho and Kombo (2002) this kind of questions are easy to analyse. The study also used likert questions in the questionnaire. Mugenda and Mugenda (2003) likert scales are usually found in questions which are matrix in nature and have more than 2 classifications. The respondents were provided with the questionnaires by the research through hand delivery.

### **3.6 Validity and Reliability**

#### **3.6.1 Validity**

A pilot study was carried out to ascertain the validity and reliability of the questionnaire. Kothari (2006) a pilot study is carried out afore the actual study to determine the validity and

reliability of instruments of data collection. This was done using a sample size of 10%. Twenty-one respondents representing senior staff members and managers were selected randomly. Pilot testing was carried out prior to the questionnaires being used. Participants in the pilot study were requested give comments on any supposed uncertainties, oversights or mistakes about the drafted questionnaire. A few suggestions on ambiguous statements when noted were restated to guarantee precision before questionnaires were used for the study. The pilot study results were used in reviewing the questionnaires to enhance its appropriateness. The precision of collected data is determined by the validity of instruments of data collection. This was guaranteed through the pilot test to review any ambiguous questions.

### **3.6.2 Reliability**

The questionnaires were pre-tested using a sample of twenty-one (21) to ascertain its reliability. The Cronbach alpha was used to determine the reliability. The alpha measures average quantifiable things and their correlation. Hair *et al.* (1998) Cronbach alpha tested the scale reliability of the questionnaires; an alpha of 0.70 is acceptable. The questionnaires were issued to the selected pilot sample and then collected. This assisted in checking the consistency of the Responses hence the reliability of the questionnaire.

### **3.7 Data Analysis and Presentation**

It is generally a summary of the important characteristics and associations of data for analysis generalization to ascertain behaviour pattern and certain results. Filled and returned questionnaires were edited for consistency and completeness. The study used descriptive, inferential and content analysis. Descriptive analysis was used in quantitative data whereby

mean, standard deviation was used; content analysis was used in qualitative data. Regression was used to ascertain the relationship between the study variables.

### **3.8 Empirical Model**

A multiple regression was conducted to determine the relationship between the study variables. The regression equation is:

$$Y = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4 + \epsilon$$

Where:

Y = the dependent variable (Performance)

$\beta_0$  = the regression constant

$\beta_1, \beta_2, \beta_3$  and  $\beta_4$  = the coefficients of independent variables

X1 = Technology readiness

X2 = Teacher technical competency

X3 = Teacher Experience

X4 = Teacher Attitude.

E = Error term

The results were presented using charts, graphs and distribution tables for easy understanding.

### **3.9 Ethical Consideration**

The researcher was cautious to ensure the privacy of the collected data. The researcher introduced himself to the respondents and also explained to them the purpose of the study.

The researcher also consulted with the respondent's prior administration of the

questionnaires. The respondents were given a chance to fill in the questionnaires without being forced. The results were analysed with no manipulation.

## **CHAPTER FOUR**

### **DATA ANALYSIS, INTERPRETATIONS AND PRESENTATION**

#### **4.1 Introduction**

This section involves the analyses, interpretation and presentation of the findings from the study in relation to the study objective, which was establish the association between e-learning implementation and performance of international schools in Nairobi, Kenya. Further the study sought to determine the effects of technology readiness, teachers' technical competency, and teachers' experience and also to determine the effect of teachers' attitude towards adoption of technology on performance of international schools in Nairobi, Kenya

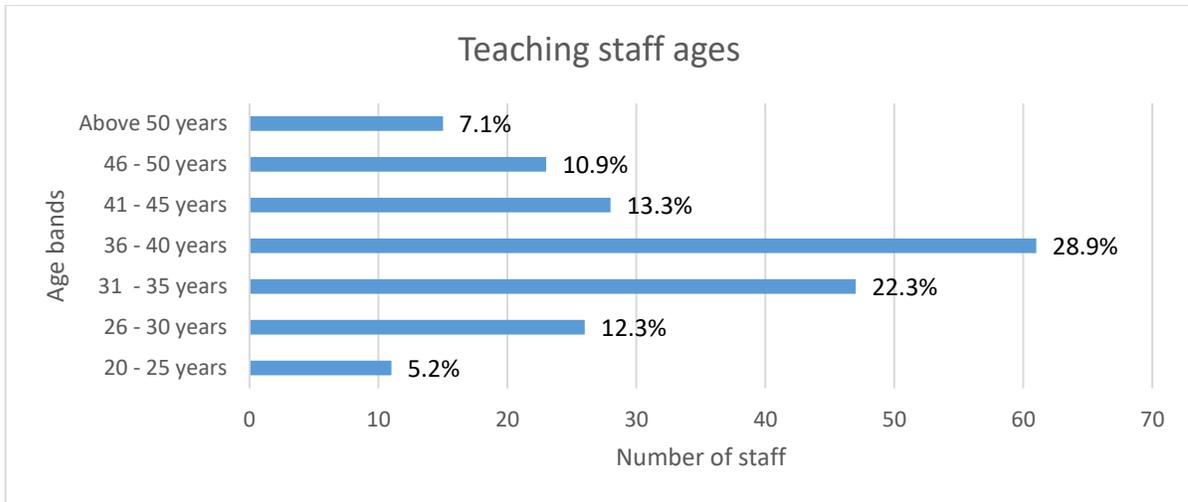
#### **4.2 Response Rate**

The study targeted 214 teaching staff from the 15 mainstream International Schools in Nairobi a sample 214 teaching staff was selected. The researcher administered 214 questionnaires, 211 of the questionnaires were filled and returned. This formed 98.6% response rate.

#### **4.3 Demographic Information**

##### **4.3.1 Respondents Age**

The teaching staffs from the specified schools were asked to designate their age. The results were as shown in the figure 4.2.



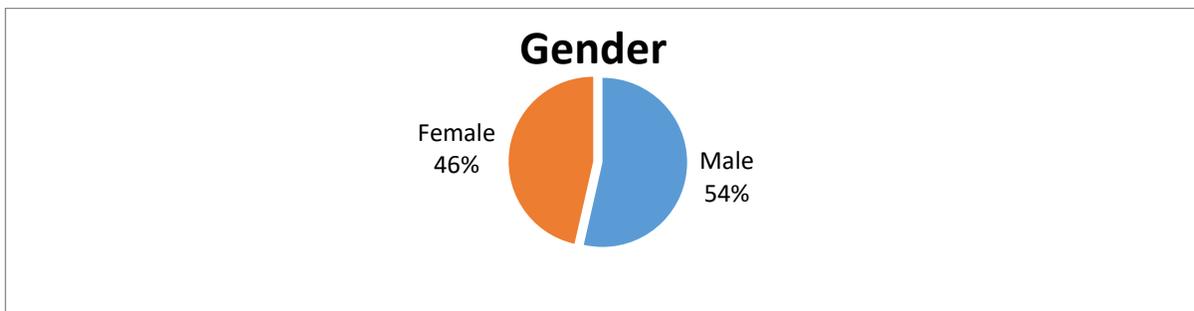
**Figure 4.1: Respondents Age**

**Source:** (Researcher, 2017)

Most of the respondents were aged between 36 to 40 years. This implies that the study included teaching staff of all age groups.

#### 4.3.2 Gender of the respondent

The study sought to determine the gender of respondents. Results are as indicated in Figure 4.3



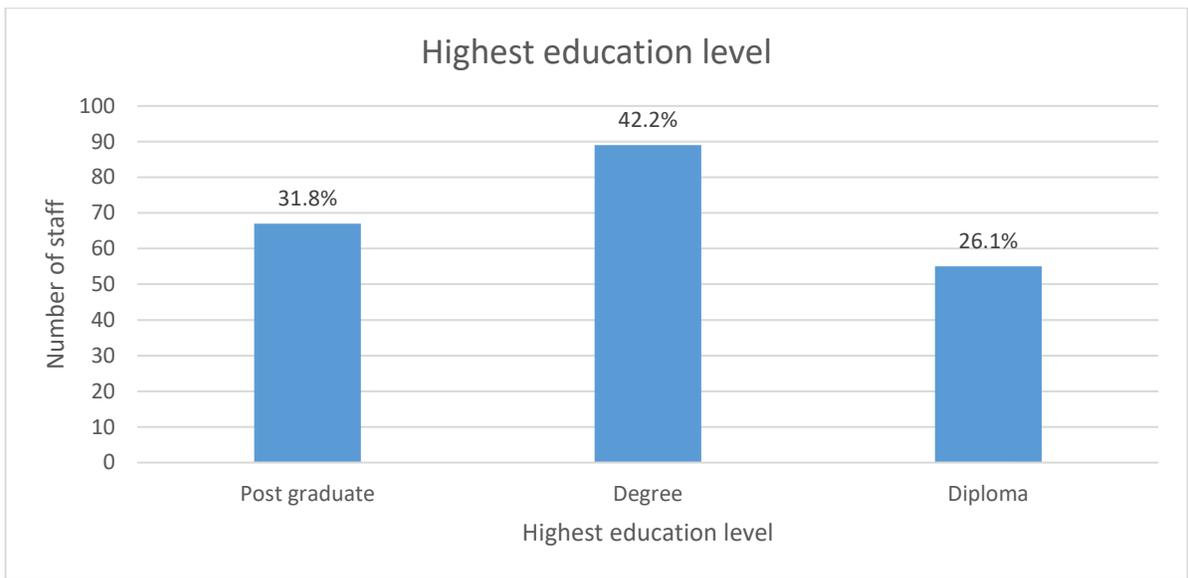
**Figure 4.2: Gender of the respondent**

**Source:** (Researcher, 2017)

Fifty four percent of the respondents were male while forty six percent were female. Therefore both genders were involved in the study.

### 4.3.3 Highest level of education

The study sought to ascertain the education level of the respondents. The findings are as indicated in figure 4.4



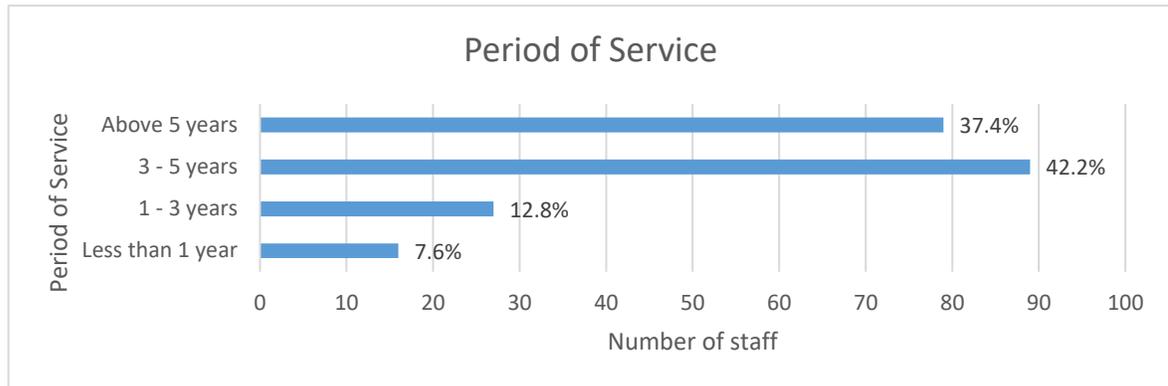
**Figure 4.3: Highest Education Level**

**Source:** (Researcher, 2017)

The findings are an indicator that most of the teaching staff at international schools were degree holders in their field hence their expertise in terms of qualifications did not influence the study.

### 4.3.4 Period of Work in the School

With regards to the respondents' years of service in their various schools, the teaching staffs were requested to indicate how long they had worked in their organisations. The study findings were as presented in the figure 4.5



**Figure 4.4: Period of Service**

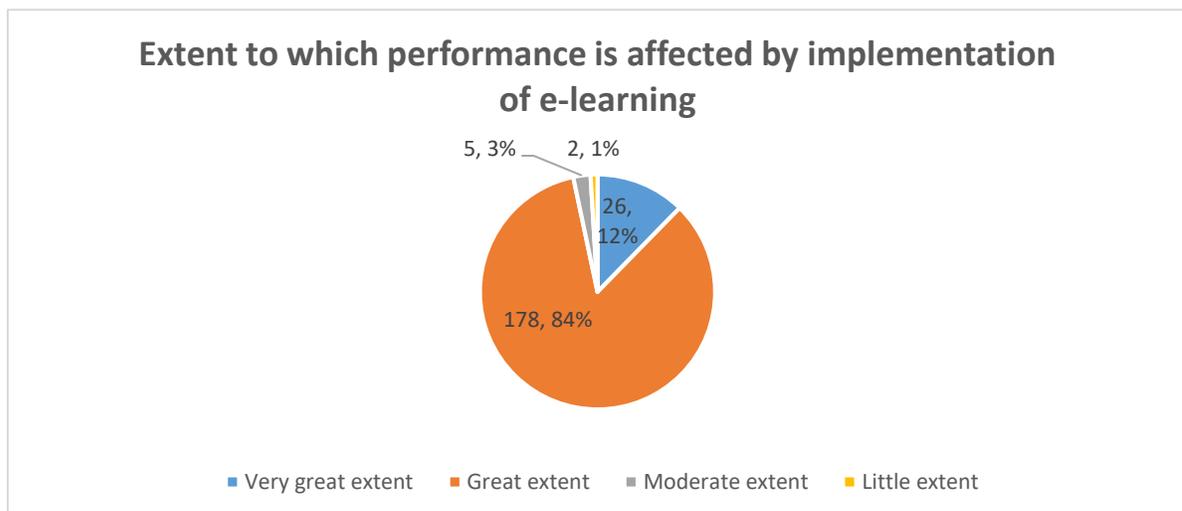
**Source:** (Researcher, 2017)

The results show that a great number of the teaching staff had been in teaching profession at their schools for more than 3 years. They were in a position to provide information needed for the study.

#### 4.4 Performance

##### 4.4.1 Extent to which performance is affected by implementation of e-learning

The teachers were requested to indicate to what extent is performance affected by



implementation of e-learning technology as shown in figure 4.6

**Figure 4.5: Extent to Which Performance is affected by Implementation Of E-Learning**

**Source:** (Researcher, 2017)

This shows that performance is affected by implementation of e-learning technology as was indicated by most of the teachers to a great extent out of the 211 respondents.

**4.4.1 Level of Agreement on Statements That Relate to Performance**

Respondents were requested to indicate their agreement level on statements below relating to performance of international schools in Nairobi, Kenya. Results are as shown in the table 4.2. A scale whereby 5 =strongly agree, 4=agree, 3=neutral, 2=disagree, 1=strongly disagree was used.

**Table 4.1: Level of Agreement on Performance of International Schools**

<b>Statement</b>	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>	<b>Mean</b>	<b>S.D</b>
Learner performance is affected by implementation of technology	2	5	22	114	68	4.142	0.992
Learner interaction with the teacher is affected by implementation of technology	0	1	17	139	54	4.166	1.137
School ranking is affected by implementation of technology	0	8	21	93	89	4.246	1.006
Overall comprehension and mastery of subject content hence performance is influenced by e-learning implementation.	0	4	18	134	55	4.137	1.095
Differentiated teaching and catering for weaker students is enhanced with implementation of e-learning hence leading to better performance.	0	7	14	127	63	4.166	1.072

**Source:** (Researcher, 2017)

From table 4.2, most respondents agreed that School ranking is affected by implementation of technology.

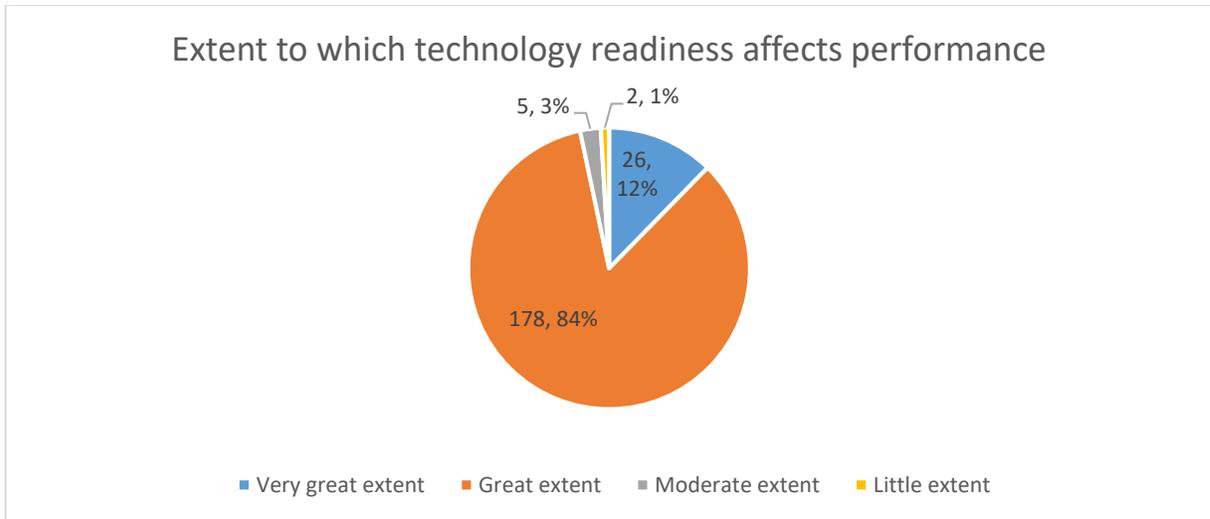
On how else the implementation of e-learning technology affects performance of international schools in Nairobi, respondents indicated that execution of various learning styles of delivery have diverse outcomes. Also, the respondents indicated that e-learning delivery medium positively impacts performance and also that E learning as a strategy used in learning provides great opportunities to learners and improves their performance.

Further the respondents indicated that implementation of E learning ensures that the school is in the world class category thus even giving the students more confidence in their studies. Also, respondents indicated that e learning technology benefits comprise the provision of novel potentials to students. The study findings agree with those of (Rodgers, 2009) who noted that e learning can improve performance in academics, though it should be tailored to the ability of students. The researcher further indicates that online learning positively influences performance for instance it is more learner centred.

## **4.5 Technology Readiness and Performance**

### **4.5.1 Extent to which technology readiness affects performance**

The teachers were asked to specify the extent to which technology readiness affects performance of international schools in Kenya. The study findings were tabulated in figure 4.7



**Figure 4.6: Extent to which technology readiness affects performance**

**Source:** (Researcher, 2017)

The respondents pointed out to a great extent that technology readiness affects performance of international schools in Kenya.

#### **4.5.2 Effect of Technology Readiness on Learner Interactions on Performance**

The respondents were asked to indicate their level of agreement on statements below relating to effect of technology readiness on learner interactions on performance of international schools in Nairobi, Kenya. As shown in the table 4.3. A scale whereby 5=strongly agree, 4=agree, 3=neutral, 2=disagree, 1=strongly disagree was applied.

**Table 4.2: Effect of Technology Readiness on Learner Interactions on Performance**

<b>Statement</b>	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>	<b>Mean</b>	<b>S.D</b>
Computer programs have been developed to individualized instruction and remedial work	0	0	11	89	111	4.474	1.203
Individualized instructions have enhanced adaptability to individual patterns of learning	0	2	23	112	74	4.223	1.015
The disadvantage of individualized instruction includes lack of social interaction and communication	0	0	16	154	41	4.118	1.238
Computer programs provide simple approaches to learner's errors and rewards correct responses while rejects incorrect responses	0	4	9	98	100	4.393	1.143
Computer based learning is less progressive as compared to teachers interventions	0	0	45	78	88	4.204	0.923
Computer-based interventions take many forms and some will be more effective than others	0	0	21	145	45	4.114	1.162
Technological hardware has improved pictorial presentation in learning as well as enhanced learner's concentration & focus	0	0	33	81	97	4.303	1.020
Technological hardware such as use of interactive whiteboards has made teaching more enjoyable and easy	0	0	0	144	67	4.318	1.249
Technological hardware has reduced the teaching time of some topics such as Transformation Geometry by half	0	10	21	119	61	4.095	0.990
The presence of e scanners during learning is important for diagram scanning and projection and problem solving.	0	0	34	95	82	4.227	0.959
Transformations demonstrations has greatly improved understanding of the learners	0	0	51	99	61	4.047	0.846

**Source:** (Researcher, 2017)

The respondents agreed that the programs on computers programs have advanced to cater for individual instructions. On how else the technology readiness affects performance of international schools in Nairobi, more refined types of programming can be fund nowadays

providing an easy way of diagnosing and interpreting misconceptions; although in some situations they might not take personal interpretations, in situations where they are unpopular to the whole population this affects the students' performance and in general the school performance. Further the respondents indicated that E learning assist learners to develop high thinking capacity and acquire skills on problem solving. Participating in the actual life activities gives learners the chance to come up with analogy, deduce relationships, and predict results and data analysis. The study findings concur with those of (Akaslan & Law, 2010).They asserted that E learning needs resources for easy implementation.

#### 4.6 Teachers Technical Competency and Performance

##### 4.6.1 Extent to which teacher's technical competency affects performance

The respondents were asked to indicate the extent to which teacher's technical competency affect performance of international schools in Nairobi, Kenya. The findings were as presented in figure 4.8

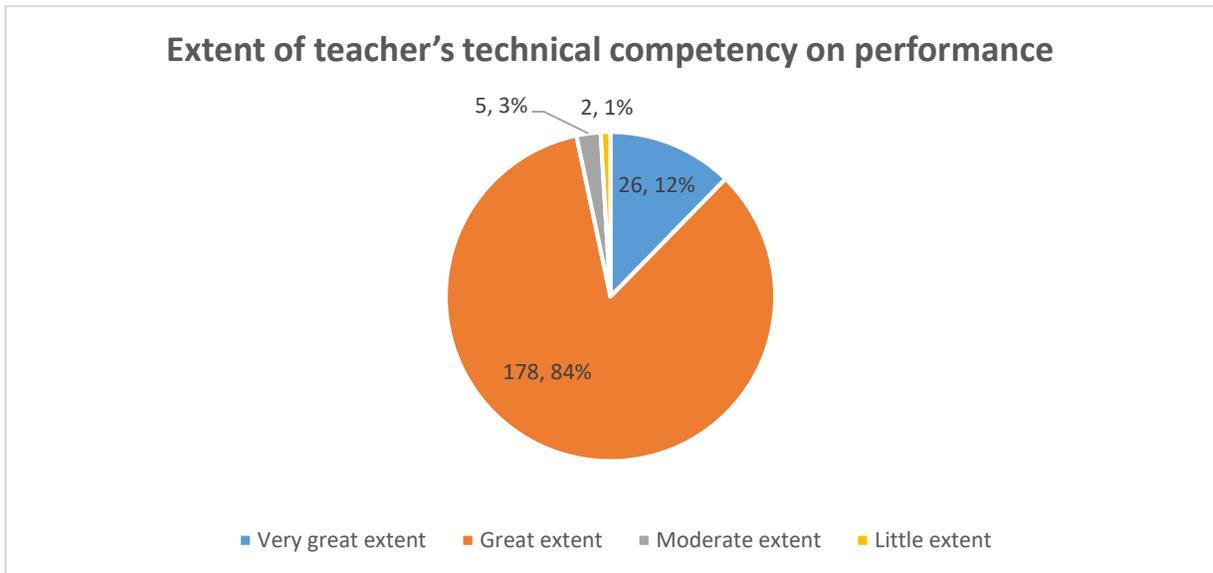


Figure 4.7: Extent of teacher's technical competency on performance

**Source:** (Researcher, 2017)

This shows that most teachers to a great extent complied that teacher's technical competency affects performance of international schools in Nairobi, Kenya.

#### **4.6.2 Level of agreement on statements that relate to teacher's technical competency effect on performance**

Respondents were requested to indicate their agreement level with statements that relating to teacher's technical competency effect on performance of international schools in Nairobi, Kenya. As shown in the table 4.4. A scale whereby 5=strongly agree, 4=agree, 3=neutral, 2=disagree, 1=strongly disagree was used.

**Table 4.3: Teacher’s technical competency and performance of international schools**

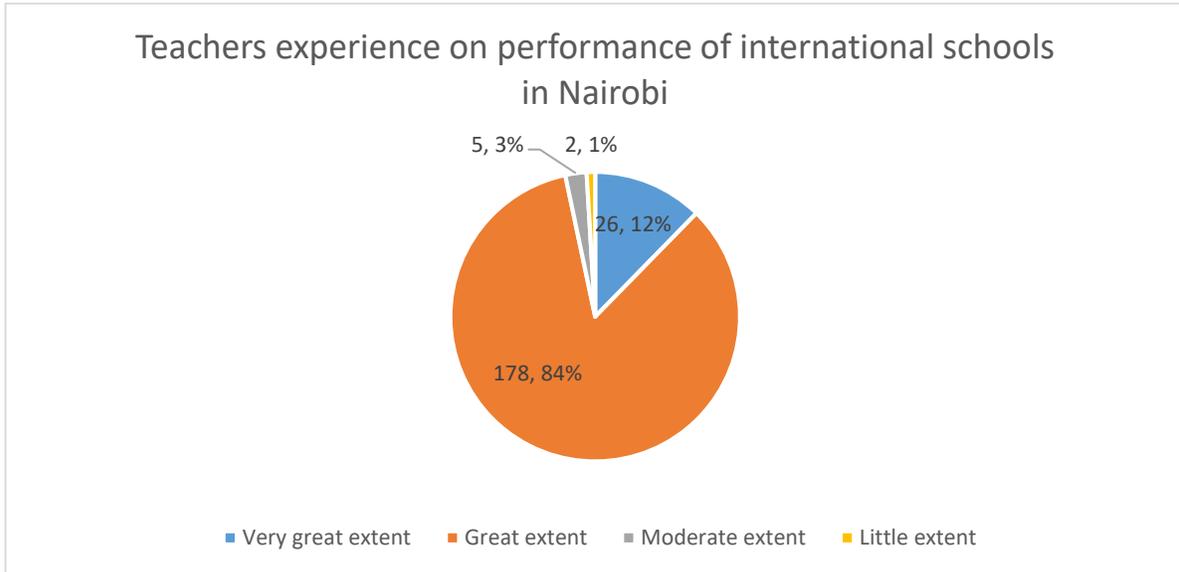
<b>Statement</b>	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>	<b>Mean</b>	<b>SD</b>
The teachers technical support is adequate to support e-learning in the school	0	19	34	69	89	4.081	0.880
I feel self-assured since am able to come up with a technology for improving activities of the learners.	0	34	64	52	61	3.664	0.572
Am ready to be trained on E learning to gain the knowledge and skills	0	27	45	59	80	3.910	0.752
There are training opportunities to learn on new teaching technology	0	0	38	78	95	4.270	0.987
Instructors are ready to use electronic learning in teaching	0	17	14	57	123	4.355	1.218
There are adequate computer-based learning materials in the school	0	23	21	120	47	3.905	0.936
It is essential to study computer usage before teaching using computer	0	0	53	90	68	4.071	0.831
E learning is an interesting way for learning	0	10	39	67	95	4.171	0.938

**Source:** (Researcher, 2017)

From the study findings, the respondents agreed that instructors are in a position to adopt the novel technology. Regarding how the teachers’ technical competency affects performance of international schools, experience in IT is important for teachers handling e learning Programs. Also, the respondents indicated that teaching experience is a product of teachers schooling, training, experience and this affects performance. The study findings concur with those of (Boakye & Banini, 2008). They asserted that experience of teachers’ in usage e learning programs relies on the experience one has in IT. Also, the findings concur with those of (Eslaminejad, Masood, & Ngah, 2009), they asserted that it is unreasonable to change teachers teaching methods if training on IT is not provided to introduce them to the new teaching methods.

## 4.7 Teachers Experience and Performance

The teachers were asked to indicate the extent to which their experience affects performance of international schools in Nairobi, Kenya. As shown in figure 4.9



**Figure 4.8: Teachers experience on performance of international schools in Nairobi**

**Source:** (Researcher, 2017)

The above shows that most respondents pointed out to a great extent that teachers experience affect performance of international schools in Nairobi, Kenya.

### 4.7.1 Teachers experience and performance of international schools

The respondents were enquired to indicate their agreement level regarding the statements below relating to teachers experience effect on the performance of international schools in Nairobi, Kenya. The study findings were as presented in the table 4.5

**Table 4.4: Teachers Experience and Performance of International Schools**

<b>Statement</b>	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>	<b>Mean</b>	<b>S.D</b>
Teaching experience influences effective usage of ICT during learning	0	0	47	90	74	4.128	0.870
Effectiveness in computers usage is associated with comfort-level of the technology and the ability to tailor instructions to teachers perceived student requirements	0	12	26	85	88	4.180	0.949
Knowledgeable teachers are ready to integrate ICT into their teaching	0	8	57	81	65	3.962	0.751
Teacher experience on use of ICT in assisting students is a result of perceived ease of use of ICT in assisting students	0	5	61	70	75	4.019	0.782

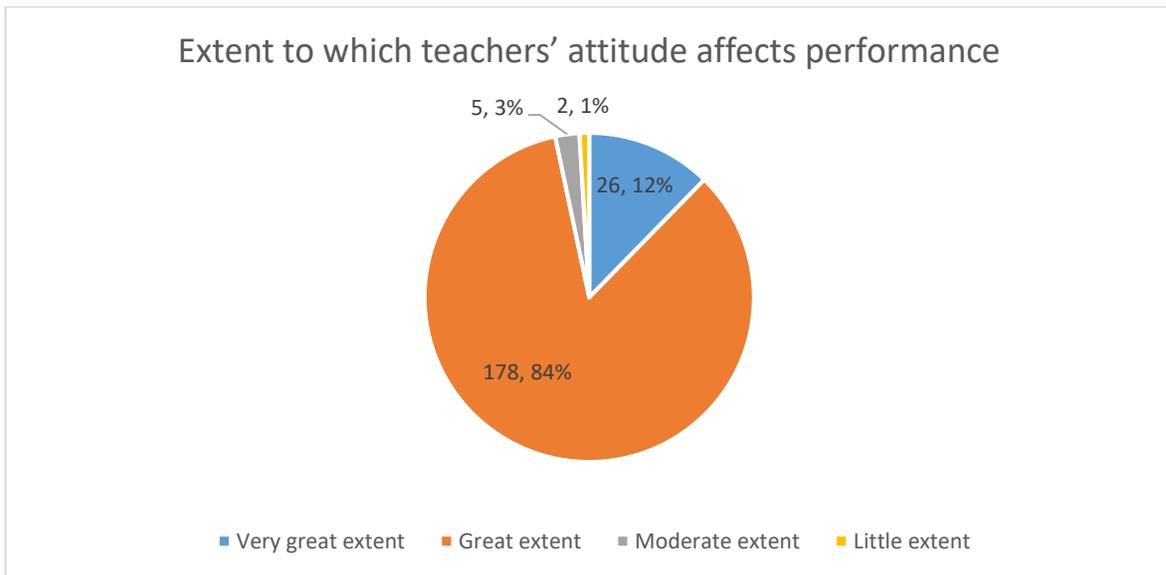
**Source:** (Researcher, 2017)

From table 4.5 the respondents agreed that effectiveness in computers usage is associated with comfort-level of the technology and the ability to tailor instructions to teachers perceived student requirements. On how else the teachers experience affects performance of international schools in Nairobi, the study research indicates knowledgeable teachers are ready to integrate ICT into their teaching. Teacher experience on use of ICT in assisting student is a result of PEOU of ICT in assisting student, PEOU helps in assisting teacher's acceptance of ICT in learning, this is the perception about the degree of effort needed to use a particular system, this is acquired through experience. Further the respondents indicated that Instructors experienced in technology usage are able to later space and time dynamics in learning. Evaluation technology assists instructors to efficiently determine the strength and weakness of their students. The study findings concur with those of (Wong & Li, 2008).

They indicated that experience in teaching influences successful ICT usage in learning Weiner (2000) the experience of instructor's has a significant relation with technology usage.

#### 4.8 Teachers' Attitude and Performance

The teaching staffs were asked to point out the extent to which teachers' attitude affect performance of international schools in Kenya. As shown in figure 4.10



**Figure 4.9: Extent to which teachers' attitude affects performance**

**Source:** (Researcher, 2017)

From table 4.10, most of the respondents pointed out to a great extent that teachers' attitude affects performance of international schools.

#### 4.8.1 Level of agreement on statements that relate to teachers' attitude on performance.

The respondents were asked to indicate their agreement level with statements below relating to teachers' attitude on the performance of international schools in Nairobi, Kenya. The study findings were as presented in the table 4.6

**Table 4.5: Teachers attitude and performance of international schools in Nairobi**

Statement	1	2	3	4	5	Mean	S.D
Teaching attitude influences the successful initiation and implementation of learning technology in education	0	1	41	89	80	4.175	0.907
If instructors suppose that technology programme does not meet their needs and learners needs there would be challenges in its implememntation	0	13	27	104	67	4.066	0.903
A positive attitude by instructors on usage of learning technology provides an easy integration of the programme in the education system	0	8	44	78	81	4.100	0.852
Attitude of the teachers' is affected by the perceived usefulness of ICT in learning	0	19	33	85	74	4.014	0.822
Teacher beliefs and attitudes about ICT in learning will to a large extent affect performance of learners	0	5	44	94	68	4.066	0.845

**Source:** (Researcher, 2017)

From table 4.6 the respondents agreed that teaching attitude influences the effective introduction and execution of e learning in the education system. On how else the teachers' attitude affect performance of international schools in Kenya the study indicated that teacher

attitude towards accepting online professional development can lead to improved performance of students. E learning improves professionalism of the instructors by providing better learning methods. The study findings agree with those of (Zeni, 2008). He asserted that successful introduction and implementation of e learning relies on the willingness of the instructors. If instructors perceive the technology as unfulfilling then they would not support its integration in learning.

#### 4.9 Regression Analysis

**Table 4.6: Model Summary**

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.874 <sup>a</sup>	.764	.731	.12225

Adjusted R squared is coefficient of determination which tells us the variation in the dependent variable due to changes in the independent variable. From the findings in the table below the value of adjusted R squared was 0.731 an indication that there was variation of 73.1% on performance due to changes in technology readiness, technology competency and teacher experience and teacher attitude at 95% confidence interval. This shows that 73.1 % changes in performance could be accounted to changes in technology readiness, technology competency, and teacher experience and teacher attitude. R is the correlation coefficient which shows the relationship between the study variables, from the findings shown in the table below there was a strong positive relationship between the study variables as shown by 0.874.

**Table 4.7: ANOVA**

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	1.488	4	0.372	3.131	.048 <sup>b</sup>
	Residual	67.774	206	0.329		
	Total	69.262	211			

From the ANOVA statistics in the table below, the processed data, which is the population parameters, had a significance level of 0% which shows that the data is ideal for making a conclusion on the population parameters as the value of significance (p-value ) is less than 5%. The F calculated value was greater than the F critical value ( $3.131 > 1.9861$ ) an indication that there were significant differences between performance and technology readiness, technology competency, teacher experience and teacher attitude. The significance value was less than 0.05 indicating goodness of fit of the model.

**Table 4.8: Coefficients**

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
1 (Constant)	.878	.357		2.459	.016
Technology readiness	.305	.097	.402	3.145	.002
Technology competency	.245	.147	.182	1.664	.010
Teacher experience	.158	.100	.183	1.583	.017
Teacher attitude	.071	.093	.091	.760	.049

The established regression equation was

$$Y = 0.878 + 0.305 X_1 + 0.071 X_2 + 0.158 X_3 + 0.245 X_4$$

From the above regression equation, it was revealed that holding technology readiness, technology competency, teacher experience and teacher attitude to a constant zero, performance would stand at 0.878, a unit increase in technology readiness would lead to increase performance by a factor of 0.305. A unit increase in technology competency would lead to increase in performance by factors of 0.071. A unit increase in teacher experience would lead to increase in performance by a factor of 0.158 and unit increase in teacher attitude would lead to increase in performance by a factor of 0.245. The study further revealed that technology readiness, technology competency, teacher experience and teacher attitude were statistically significant influencing performance of international schools, as all the p value (sig) were less than 0.05. The study also found that there was a positive relationship between performance and technology readiness, technology competency, teacher experience and teacher attitude.

## **CHAPTER FIVE**

### **SUMMARY, CONCLUSIONS AND RECOMMENDATIONS**

#### **5.1 Introduction**

This section discusses the findings summary, conclusion and recommendation and suggestions for future studies. The study aim was to establish the association of e- learning implementation and performance of international schools in Nairobi, Kenya. Additionally, to determine the effects of: technology readiness, teachers' technical competency, teachers experience and also to determine the effect of teachers' attitude towards adoption of technology on performance of international schools in Nairobi, Kenya

#### **5.2 Summary of the Key Findings**

##### **5.2.1 Performance**

On what extent is performance affected by implementation of e-learning technology the study found out that performance is affected by implementation of e-learning technology by a great extent. Further the study revealed that school ranking is affected by implementation of technology, differentiated teaching and catering for weaker students is enhanced with implementation of e-learning hence leading to better performance and also that learner interaction with the teacher is affected by implementation of technology. Additionally, the study revealed that; learner performance is affected by implementation of technology and also that overall comprehension and mastery of subject content hence performance is influenced by e-learning implementation. Also, the study revealed that implementation of e-learning technology might have diverse extent of achievement. Also, that e-learning delivery medium is positively related to performance and also that E-learning as a teaching and

learning strategy has provided a lot more opportunities for the learning process of students, thus, contributes to their academic performance. Additionally, e learning technology offers many opportunities to learners.

### **5.2.3 Technology Readiness**

The study research revealed that to a great extent technology readiness affects performance of international schools in Kenya. Further the study indicated that: the programs in the computer are designed to provide individual decisions, also that computer programs tend to take a simple approach to errors done by children's and the correct responses are rewarded and incorrect ones are rejected. Additionally, the study revealed that technological hardware such as use of interactive whiteboards has made teaching more enjoyable and easy.

Further the study revealed that technological hardware has improved graphic classroom presentations as well as enhanced the concentration and focus of learners and also that the disposal of computer scanners in classrooms have been beneficial in the projecting and scanning of images and notes. In addition, the study revealed that individualized instructions have enhanced adaptability to individual patterns of learning.

Also, the study revealed that the disadvantage of individualizes instruction include lack of social interaction and communication. In addition, the study also indicated that computer-based interventions take many forms and some will be more effective than others and also that technological hardware has reduced the teaching time of some topics such as transformation Geometry by half. Further the study indicated that mishandling of drawn graphs on the board and transformations demonstrations has greatly improved understanding of the learners. Also, the study revealed that the available sophisticated programming

methods provide a simple way of diagnosing and interpreting misconceptions; although, like any other test, the interpretation of an individual may not be picked, more so, if it is not similar to the whole population, this affects the students' performance and in general the school performance. Also, strategies based on computer assist students to develop high thinking and problem solving skills.

#### **5.2.4 Teachers Technical Competency**

In relation to the teachers' competency the study revealed that teacher's technical competency affects performance of international schools in Nairobi, Kenya by a great extent. Further the study revealed that teachers are willing to use new technology in the classroom and that there are training opportunities to learn on new teaching technology. Also, the study indicated that teachers think that computers can make learning interesting. Additionally, the teacher's technical support is adequate to support e-learning in the school and also that teachers believe that it is important for them to learn how to use computers before teaching using computer.

Also, the study research revealed that teachers would like to be trained on e-learning and also that there are adequate computer-based learning materials in their schools. Further the study indicated that teachers' feel self-assured they can improve students learning by use of technology. Further the study revealed that the success of teachers in the management of e learning programs is dependent on previous experience on IT.

### **5.2.5 Teachers Experience**

On the teachers experience the study revealed that to a great extent that teachers experience impacts performance of international schools in Nairobi, Kenya. Also, the study noted that; usage of computers effectively is associated with technology comfort level and the willingness to tailor instructions to teacher-student perceived needs and the experience in teaching impacts the use of e learning in schools. Additionally, the study revealed that the experience of teachers ICT usage in assisting students is a result of PEOU.

Also, the study revealed that experienced teachers are less ready to integrate ICT into their teaching. Teacher experience on use of ICT in assisting student is a result of perceived ease of use of ICT in assisting student, perceived ease of use helps in assisting teacher's acceptance of ICT in learning, this is the perception about the degree of effort needed to use a particular system, this is acquired through experience. Further the study revealed that teachers experienced in the use of technology have the ability to change the dynamics of time and space in schools. Assessment technologies also help teachers more efficiently identify students' strengths and weaknesses to better target instruction

### **5.2.6 Teachers' Attitude**

With regards to the teachers' attitude; the study revealed that to great extent that teachers' attitude affect performance of international schools. Further the study revealed that; teaching attitude influences the successful initiation and implementation of educational technology in school's program, also the study indicated that if teachers' attitudes are positive toward the use of educational technology then they can easily provide useful insight about the adoption

and integration of ICT into teaching and learning processes. Also, the study revealed that if teachers perceived technology programs as neither fulfilling their needs nor their students' needs, it is likely that they will not integrate the technology into their teaching and learning and also that teacher beliefs and attitudes about ICT in learning will to a large extent affect performance of learners. Further the study research revealed that attitude of the teacher is affected by the perceived usefulness of ICT in learning. Also, the study revealed that teacher attitude towards accepting online professional development can lead to improved performance of students.

### **5.3 Conclusion**

On learners' performance or school ranking the study revealed that learner performance is affected by implementation of technology and also that learner interaction with the teacher is affected by implementation of technology. Also, the study revealed that school ranking is affected by implementation of technology.

Regarding technology readiness the study revealed that computer programs takes a simplistic method to errors and correct answers are rewarded and incorrect answers are rejected and also that technological hardware has enhanced visual presentations in the classroom as well as improved learner focus and concentration. Also, the study revealed that individualized instructions have enhanced adaptability to individual patterns of learning.

With respect to teachers' technical competency the study revealed that teachers would like their schools to send them on a course on using e-learning before I start using it and also that there are training opportunity to learn on new teaching technology. Regarding the experience of teachers, the study revealed that, teaching experience influences the successful use of ICT

in classrooms and also that teacher experience on use of ICT in assisting students is a result of perceived ease of use of ICT in assisting students.

With respect to the teachers attitude the study revealed that teaching attitude influences the successful initiation and implementation of educational technology in school's program and also that positive attitude of teachers promotes integration of e learning in schools.

#### **5.4 Recommendations**

Regarding learners' performance, learner interaction and school performance. The study revealed that this performance is affected by implementation of e-learning technology as was indicated to a great extent. Thus, the study recommends that schools management should have differentiated teaching and catering for weaker students that is enhanced with implementation of e-learning for better performance

On technology readiness, the study revealed that to a great extent that technology it affects performance of international schools in Kenya. Further the study revealed that the graphs manipulation on the interactive board and demonstrations of transformations has greatly improved understanding of the learners. Thus, the study research recommends that the school managements should ensure that there is enough hardware to facilitate smooth running in classrooms.

With respect to teachers' technical competency, the study revealed that teachers believe it is important for them to learn how to use computers before teaching using computer and also that teachers are willing to use new technology in the classroom. Thus, the study recommends that the government should come up with strategies to train the teachers on

technology and also that the school management should ensure their teachers undergo refresher courses on computers to equip them to teach the children.

On the teachers experience the study revealed that to a great extent teachers experience affect performance of international schools in Nairobi, Kenya. Further the study revealed that experienced teachers are less ready to integrate ICT into their teaching. Thus, the study recommends that the teachers should embrace integration of ICT into their teaching for the benefit of the learners. Also, the study recommend that the school management should ensure that the teacher integrate ICT into their teachings.

Regarding the teachers attitude the study revealed that if teachers perceived technology programs as neither fulfilling their needs nor their students' needs, it is likely that they will not integrate the technology into their teaching and learning. Thus, the study recommends that management of the schools should ensure that the teachers have a better perception about teaching and learning

### **5.5 Areas for Further Studies**

This study was limited to study the relationship between e- learning implementation and performance of international schools in Nairobi, Kenya. The study recommends that a similar study should be conducted this time to study the relationship between the effects of technology readiness on teachers' performance in the international schools in Nairobi, Kenya

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## APPENDICES

### Appendix 1: Introduction Letter

**MICHAEL MUTESHI**

P.O. Box 18553 – 00100

Nairobi

6<sup>th</sup> October, 2016

Dear Sir/Madam,

**RE: REQUEST FOR PARTICIPATION IN A RESEARCH STUDY**

I am a final MBA student at Kenyatta University. My area of specialization is project management. I am currently undertaking a research thesis on “**E- LEARNING IMPLEMENTATION AND PERFORMANCE OF INTERNATIONAL SCHOOLS IN NAIROBI KENYA**”.

I would be grateful if you could spare some time from your busy schedule and complete the enclosed questionnaire. All the information provided will be used purely for academic purposes and will be treated with utmost confidentiality.

Thank you for your cooperation.

Yours faithfully,

**Michael Muteshi**

**MBA Student, Kenyatta University**

## Appendix II: Questionnaire

This questionnaire is designed to collect data to establish the impact of educational technology on learner interactions in classroom management in Kenya. Your participation in facilitating this study will be highly appreciated.

Kindly ticks in the space provided [ ] the correct answer or supply the required information where, required, please specify and elaborate.

### Part A: Respondents Information

1. Name..... (Optional)

2. Age of the respondent

20-25 years ( ) 26 to 30 years ( ) 31 to 35 years ( )

36 to 40 years ( ) 41 to 45 years ( ) 46 to 50 years ( )

Above 50 years ( )

3. Gender of the respondent?

Male [ ]

Female [ ]

4. What is your highest level of education?

Postgraduate [ ] Degree [ ] Diploma [ ]

5. How long have you worked in the organisation?

Less than 1 year [ ] 1-3 years [ ] 3-5 years [ ] above 5 years [ ]

**Part B: Performance (Learner performance, Learner interaction, School ranking)**

6. To what extent is performance affected by implementation of e-learning technology?

- Very great extent [ ]
- Great extent [ ]
- Moderate extent [ ]
- Little extent [ ]
- No extent [ ]

7. Indicate your level of agreement with the following statements that relate to performance of international schools in Nairobi, Kenya (5=strongly agree, 4=agree, 3=neutral, 2=disagree, 1=strongly disagree)

Statement	1	2	3	4	5
Learner performance is affected by implementation of technology					
Learner interaction with the teacher is affected by implementation of technology					
School ranking is affected by implementation of technology					
Overall comprehension and mastery of subject content hence performance is influenced by e-learning implementation.					
Differentiated teaching and catering for weaker students is enhanced with implementation of e-learning hence leading to better performance.					

8. How else does implementation of e-learning technology affect performance of international schools in Nairobi, Kenya that is not indicated above?

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**Part C: Technology Readiness**

9. To what extent does technology readiness affect performance of international schools in Kenya?

- Very great extent [ ]
- Great extent [ ]
- Moderate extent [ ]
- Little extent [ ]
- No extent [ ]

10. Indicate your level of agreement with the following statements that relate to effect of technology readiness on learner interactions on performance of international schools in Nairobi, Kenya. (5=strongly agree, 4=agree, 3=neutral, 2=disagree, 1=strongly disagree)

<b>Statement</b>	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>
Computer programs have been developed to individualized instruction and remedial work					
Individualized instructions have enhanced adaptability to individual patterns of learning					
The disadvantage of individualizes instruction include lack of social interaction and communication					
Computer programs tend to take a simplistic approach to children's errors and simply reward correct answers and reject incorrect answers					
Computer intervention is less progressive than teachers interventions					
Computer-based interventions take many forms and some will be more effective than others					
Technological hardware has improved computer presentation in the classroom as well as improves the concentration of learner					
Technological hardware such as use of interactive whiteboards has made teaching more enjoyable and easy					

Technological hardware has reduced the teaching time of some topics such as Transformation Geometry by half					
Computer scanners are important in scanning and projecting diagrams, notes or solutions to problems in the classroom					
Graphs drawn has greatly improved understanding of the learners					

11. How else does technology readiness affect performance of international schools in Nairobi, Kenya that is not indicated above?

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**Part D: Teachers Technical Competency**

12. To what extent does teacher’s technical competency affect performance of international schools in Nairobi, Kenya?

- Very great extent [ ]
- Great extent [ ]
- Moderate extent [ ]
- Little extent [ ]
- No extent [ ]

13. Indicate your level of agreement with the following statements that relate to teacher’s technical competency effect on performance of international schools in Nairobi, Kenya (5=strongly agree, 4=agree, 3=neutral, 2=disagree, 1=strongly disagree)

Statement	1	2	3	4	5
The teachers technical support is adequate to support e-learning in the school					
Am confident because i can design technology improved learning activities for my students.					
I would like my school to send me on a course on using e-learning before I start using it					

There are training opportunity to learn on new teaching technology					
Teachers are willing to use new technology in the classroom					
There is adequate computer-based learning materials in the school					
I believe that it is important for me to learn how to use computers before teaching using computer					
I think that computers can make learning interesting					

14. How else does teacher’s technical competency affect performance of international schools in Nairobi, Kenya that is not indicated above?

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.....

**Part E: Teachers Experience**

15. To what extent does teachers experience affect performance of international schools in Nairobi, Kenya?

- Very great extent [ ]
- Great extent [ ]
- Moderate extent [ ]
- Little extent [ ]
- No extent [ ]

16. Indicate your level of agreement with the following statements that relate to teachers experience effect performance of international schools in Nairobi, Kenya? (5=strongly agree, 4=agree, 3=neutral, 2=disagree, 1=strongly disagree)

Statement	1	2	3	4	5
Teaching experience influences the successful use of ICT in classrooms					
Effective use of computers was related to technological comfort levels and the liberty to shape instruction to teacher-perceived student needs					

Experienced teachers are less ready to integrate ICT into their teaching					
Teacher experience on use of ICT in assisting students is a result of perceived ease of use of ICT in assisting students					

17. How else does teachers experience affect performance of international schools in Nairobi, Kenya that is not indicated above?

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**Part F: Teachers' Attitude**

18. To what extent does teachers' attitude affect performance of international schools in Kenya?

- Very great extent [ ]
- Great extent [ ]
- Moderate extent [ ]
- Little extent [ ]
- No extent [ ]

19. Indicate your level of agreement with the following statements that relate to teachers attitude effect performance of international schools in Nairobi, Kenya.

(5=strongly agree, 4=agree, 3=neutral, 2=disagree, 1=strongly disagree)

Statement	1	2	3	4	5
Teaching attitude influences the successful initiation and implementation of educational technology in school's program					
If teachers perceived technology programs as neither fulfilling their needs nor their students' needs, it is likely that they will not integrate the technology into their teaching and learning					
If teachers' attitudes are positive toward the use of educational technology then they can easily provide useful insight about the adoption and integration of ICT into teaching and learning					

processes					
Attitude of the teacher is affected by the perceived usefulness of ICT in learning					
Teacher beliefs and attitudes about ICT in learning will to a large extent affect performance of learners					

20. How else does teachers' attitude affect performance of international schools in Kenya that is not indicated above?

.....

.....

***THANK YOU***

### **Appendix III: List of Mainstream International Schools in Nairobi**

- |  |   |
|--|---|
| 1. Aga Khan Academy                    | 9. Light Academy Schools                  |
| 2. Banda School                        | 10. Nairobi Academy                       |
| 3. Braeburn High School Nairobi        | 11. Pembroke House School                 |
| 4. Brookhouse School                   | 12. Rift Valley Academy                   |
| 5. GEMS Cambridge International School | 13. Rosslyn Academy, International school |
| 6. Hillcrest School                    | 14. Rusinga School                        |
| 7. International School of Kenya       | 15. West Nairobi School                   |
| 8. Kenton College                      |   |