FACTORS INFLUENCING IMPLEMENTATION OF THE LAPTOP PROJECT IN PUBLIC PRIMARY SCHOOLS IN KENYA: A CASE OF NAIROBI COUNTY

BY

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DECLARATION

This research project report is my original work and that it has not been presented in any other university or institution for academic credit.

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This research project report has been submitted for examination with my approval as university supervisor.

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DEDICATION

This research work is dedicated to my parents Mr. and Mrs. Rajab Banju, who never failed to teach and guide me; my friend Tony Mwendwa, who supported me; to my siblings who helped me finish this project and most of all to the Almighty God who gave me strength and good health.

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ACRONYMS AND ABBREVIATIONS

CEO- County Education Officer

FPE- Free Primary Education

GoK- Government of Kenya

ICT-Information and Communication Technology

IT- Information Technology

JLP-Jubilee Laptop Project

KICD- Kenya Institue of Curriculum Development

KIE- Kenya Institue of Education

MOE- Ministry of Education

SLTP – School Laptop Project

ABSTRACT

The education sector in Kenya has undergone a major transformation due to amongst other factors, changing patterns of curriculum delivery and technological innovations. One of such initiatives is the IT curriculum implementation to primary schools which is a key development pillar in line with Vision 2030. The intended introduction of laptops to primary schools in Kenya; a project embedded in the Jubilee government's manifesto has faced various problems. This study sought to assess the factors influencing implementation of the laptop project in public primary schools in Kenya; a case of Nairobi County. The independent variables in the study include procurement procedures, financing issues, teacher's capacity and power supply. The study assumed that all the respondents are fully aware of the laptop project and thus provided their honest perceptions. Some of the areas covered in the literature include the theoretical framework of the study, educational technology projects, and laptop project in other countries, knowledge gap and the conceptual framework. The study focused on the diffusion theory by Ryan and Gross which is a collection of a number of theories. Cross sectional descriptive design was adopted in this study. The study specifically targeted head teachers and teachers of public primary schools in Nairobi County as well as the education officials of MOE and KICD. The study adopted cluster sampling to pick the head teachers and teachers from the constituencies in Nairobi County. However, simple random sampling was used to select four respondents; one head teacher and three regular teachers; from every sampled school; giving a total of 76 teachers; while 20% of the officials population from both the MOE and the KICD formed the sample size 40 officials. The study adopted a semi-structured questionnaire for the teachers and an interview guide for the officials. The researcher used both qualitative and quantitative analysis. Frequency distribution tables and percentages were adopted to present the data. The relationship between the variables was tested using the Pearson's correlation technique. From the findings, the researcher thus concluded that procurement procedures, financial constraints and teacher's capacity had the major impact on implementation of the laptop project. Since the value of R square is less than 50%, the researcher deduced that the proportion of variation associated to the independent variables had a moderate effect. Some of the factors mentioned by the ministry and KICD officials as hindering the implementation of the process include political interference, corruption, poor oversight, procurement bottlenecks, and lack of funds, poverty, laptop security, electricity and rampant impunity. Out of the listed factors, the main cause of slow implementation of the laptop project according to most respondents was corruption and rampant impunity. An important finding is that the explanatory variables in the model result in the direct influence on the implementation of the school laptop project. Study recommends that: the government of Kenya strengthens the POA (procurement oversight authority) and KICTB (Kenya ICT Board) to come up with mitigation measures to control the external factors that interfere with procurement procedures and processes for the laptop project with a possible measure to cushion the entire laptop project from international monetary fluctuations; political control and moderation.

CHAPTER ONE
INTRODUCTION

1.1 Background to the Study

Like many educational reform efforts, the introduction of technology in schools has been less than successful. Over the last century there were several waves of massive investment in technology to improve education, but none has had significant lasting impact on education (Zhao, Pugh, Sheldon & Byers, 2002). Despite the generous investment in, and increased presence of, computers in schools (Becker, 2000; Cattagni & Farris, 2001), computers have been found to be unused or underused in most schools (Cuban, 2001). Through evaluations of several educational technology initiatives, especially the Boulder Valley Internet Project in America, Sherry (1997) found that teachers generally go through four distinct stages as they develop expertise with the Internet and the World Wide Web: a learning and adoption trajectory. In other words, a cyclic process in which teachers evolve from learners to adopters of educational technology, to co-learners and, finally, to a reaffirmation or rejection decision.

The introduction of computers in schools in Malaysia recorded serious challenges in the curriculum, teaching practices, reallocation of resources, and even rearranging the fundamental structure of the schools (Merrow, 1995). Besides the inherent resistance to change, schools are also said to have a structure that prevents wide spread uses of computers. Collins (1996) in his reflective essay on his experience with the Apple Classroom of Tomorrow (ACOT) project cites limited classroom space, bulky computers, teachers' unwillingness to take the students to the lab, and lack of access to computers at home as factors that limit the use of technology in schools in Ghana.

A survey report titled: ‘Are our children learning? Annual Assessment Report’ by Uwezo Kenya for 2012, notes that there is at least one computer out of 10 schools in Kenya and only five out of the ten use them for learning purposes. Meanwhile, only one out of ten schools has an email address. Uwezo tested over 153,000 children in all the 47 counties across Kenya. The report which was launched on July 23, 2013 painted a grim picture of learning processes within the free primary education (FPE) program. It is thought that the large influx of “first generation learners” and an increasing lack of technology have

contributed to declining test scores in the public school system (Glennerster and Kremer, 2011). More serious problems, however, lie beyond technological or physical structures in the conceptual structure of Kenyan schools. Teacher's pedagogical beliefs and their teaching practices are also factors that seem to influence their uses of technology (Becker, 2000). Teachers who are interested in using technology in their teaching often feel that they need better support from the building and district than currently available. Such support includes both technical and social facets. Kenyan teachers need strong technical support so they can be sure that they have access to functional equipment and network (Smerdon, 2000).

1.1.1 Concept of Project Planning

According to Harrison (2002), a project can be defined as a non-routine, non-repetitive, one-off undertaking, normally with discrete time, financial and technical performance goals. Project Management institute, USA, defines project as 'a system involving the co-ordination of a number of separate department entities throughout the organization and which must be completed within prescribed schedules and time constraints.

Project management is an organized venture for managing projects (Wiley, 2005). It involves scientific application of modern tools and techniques in planning, financing, implementing, monitoring, controlling and coordinating unique activities or tasks to produce desirable outputs in accordance with the pre-determined objectives within the constraints of time and cost (PMI, 2008). Project management consists of the following stages: Project planning; Project scheduling; and Project implementation, controlling and project monitoring and evaluation.

1.1.2 School Laptop Project in Kenya

The national laptop project was expected to run from January 2014 by which time 50,000 teachers needed to have been trained on ICT integration in the classroom, besides device assembly, applications uploading, content development and delivery of devices to schools among others (Okumbe, 2014). It is envisaged that the teachers training should have been done by end of August 2013 before which there should have been induction workshops for technical teams, master trainers and training of trainers. Through this

initiative also, the government, will be able to aptly roll out the ICT project in line with its vision of bringing ICT skills to schools. By getting necessary input from all the key stakeholders, the government is guaranteed of getting an end- product that resonates with the people (Okumbe, 2014). A joint workshop was held by key stakeholders towards achievement of ICT integration capacity building for primary school teachers in preparation of the school laptop project. This meeting aimed to review existing content from various curricula on ICT skills and integration with a view to isolating relevant content (Okumbe, 2014).

The involved stakeholders planned to rewrite each module with an emphasis to enhancing pedagogy for the teaching profession and improving learning outcomes (Mutua, 2013).A harmonization curriculum team was established, to look into: content format, identifying teachers for training, structures for teacher management, curriculum harmonization, gap analysis, wholesome retooling of the teacher; and sponsorship for capacity development and incentives. The teachers are the custodians of the ICT project, and will actually do the groundwork in terms of equipping students with these very vital IT skills. By directly involving them in the preliminary stages, they have a great opportunity to exercise ownership of the project. Having the teachers input at an early stage means that the final product content, execution, structures and workings are clear from the very beginning and resonate with their specific needs (Mutua, 2013).

1.2 Research Problem

The education sector in Kenya has undergone a major transformation due to amongst other factors, changing patterns of curriculum delivery and technological innovations. One of such initiatives is the IT curriculum implementation to primary schools which is a key development pillar in line with Vision 2030. The intended introduction of laptops to primary schools in Kenya; a project embedded in the Jubilee government's manifesto has faced various problems. In addition, the jubilee government has been postponing the full implementation of the project while citing various challenges that include political interference among others. Some of the hitches noted include procurement bottlenecks that have led to various court injunctions thereby crippling the IT project implementation.

There are also questions about the viability of the project with regard to availability of electricity, security of the laptops, teacher's capacity and the educational impact of the computers in terms of improved test scores by school children, of which many doubts have been raised borrowing examples from other countries.

1.3 Purpose of the Study

Factors influencing implementation of the laptop project in public primary schools in Kenya; a case of Nairobi County.

1.4 Objectives

1. To determine how procurement procedures influence the implementation of the school laptop project in Nairobi county
2. To assess how financing issues influence the implementation of the school laptop project in Nairobi county
3. To examine how teachers capacity influence the implementation of the school laptop project in Nairobi county
4. To assess how power supply influence the implementation of the school laptop project in Nairobi county

1.5 Research Questions

1. How do procurement procedures influence the implementation of the school laptop project in Nairobi county ?
2. How do financing issues influence the implementation of the school laptop project in Nairobi county?
3. How does teacher's capacity influence the implementation of the school laptop project in Nairobi county?
4. How does power supply influence the implementation of the school laptop project in Nairobi county?

1.6 Significance of the Study

This study may not only contribute to theory building on the concept of project planning and management but also act as a theoretical reference point for other developing nations and other governments. Students and academicians who wish to carry out further research in this area may review the study literature and establish gaps for further studies. The study may help in building the existing policy frameworks for project regulations, project management and performance mapping for projects. Strategy building policy and value addition policy in the field of project management and planning may be advanced from the findings of this study. This study may help improve schools sector policy reforms, specifically IT policy in Kenyan school curriculum in realignment with vision 2030 to have I.T enabled services.

The findings of this study may help the senior government officials tasked with the planning and management of the school laptop project to better their service delivery through emphasis on unique areas that offer more value and high quality in order to fast track the delivery process. The entire education sector may gain from the findings of this study especially the challenges hindering the laptop project. The findings of the study may also be co-opted by managers of non-governmental organizations in enhancing availability of computers to rural schools in Kenya and in keeping the Ministry of Education in check.

1.7 Delimitations of the Study

Literature on laptop project in Kenyan schools will not be reviewed since it forms the premise for this study.

1.8 Limitations of the Study

School principals, teachers and education officials from MOE, KICD and KIE may decline to give information concerning their perception of school laptop project due to the fear of victimization. Time will also be a limiting factor since schools have their own tight schedules.

1.9 Assumptions of the Study

The study will assume that all the respondents are fully aware of the laptop project and that all the respondents will provide their honest perceptions.

1.10 Operational Definition of Terms

Digital Content: ICT curriculum Developed by Kenya Institute of Curriculum Development to be installed in the laptops for school children.

Financial Resources: The SLTP requires a lot of financial resources to implement it. These resources range from funds to procure the Laptops, funds to train teachers, funds to develop the ICT curriculum to be used in schools, put security measures to ensure the laptops are secure from theft and viral infections.

Power Supply: the laptops need power/energy in order to function; hence electricity is also an Independent variable that influences the implementation of the SLTP in which there is need to ensure every school as a source of power and in most cases most rural schools do not have electricity.

Procurement Procedures: this involves the whole process to be followed when acquiring the laptops in terms of purchase, quality control and checks, comparison of price verses quality, tendering process and identifying the supplier, political involvement in the procurement process among others.

School Laptop Project-Government's plans to introduce laptops as a teaching and learning tool in the public primary school system in Kenya. Hence implementation of the School Laptop Project is the dependent variable.

Teacher Capacity: the laptop implementation project also relies a lot on the capacity and ability of the teachers to teach using laptops and their training on using the laptops.

Technological Advancement: Adoption of information and communication technology as part and parcel of the school curriculum and management.

1.11 Organization of the Study

This research project report is organized into five chapters: that is chapter one, chapter two, chapter three, chapter four and chapter five. Chapter one entails the study background, problem statement, purpose of the study, objectives, significance, delimitations, limitations and assumptions of the study. Chapter two reviews literature relevant to the study. It also focuses on the theoretical framework and the conceptual framework. Chapter three highlights the study methodology with a key emphasis on design, population, sampling procedure, methods of data collection, validity, reliability of instruments, data analysis and ethical considerations. Chapter four focuses on the results collected from the field and a brief discussion while chapter five dwells on the detailed summary, discussion, conclusions and recommendations.

CHAPTER TWO
LITERATURE REVIEW

2.1 Introduction

This chapter deals with the available literature related to the study. Some of the areas covered include the theoretical anchorage of the study, educational technology projects, laptop project in other countries and the conceptual framework. This review is very important since it highlights the scope of this study and further relates to other studies done in different parts of the world.

2.2 Educational Technology Projects

The term, educational technology projects, emerged in literature around 1948 (Saettler, 1990), but the idea of educational technology has been in existence from the time of early man. From the recording of pictographs and subsequent instructional technique development across cultures, he notes that the technology of instruction reflected particular ways of thinking, acting, speaking, or feeling. Further notation indicated that significant shifts in educational values, goals, or objectives have led to diverse technologies of instruction. These technologies of instruction take on many varying forms, ideas, concepts, strategies, and tools used in the total application of educational technology.

The definitions that have evolved over the last half century slowly metamorphosed from targeting audiovisual communication in the learning process to instructional technology being described as a process. A third definition incorporated the term 'educational technology' as a field involved in the facilitation of human learning. Further tweaking produced a definition that listed the factors involved in the process. The currently prominent acronym, IT, used outside the realm of education refers to Information Technology which largely encompasses data processing and communications. Thompson, Simonson, and Hargrave (1996) indicate that a naturalistic research approach will assist in producing information that will influence the design of instruction to match individual needs. Research in the field of educational technology is changing in response to a

current emphasis on exemplary teaching strategies and the need for evidence of technology's impact on student learning.

Saettler (1990) documents in his text the early instructional theories and methods that lay the groundwork for modern educational technology. He also chronicles the evolution of media, such as film and radio, which characterized educational technology in the early- to mid-1900s.

Throughout the 1980s and 1990s there was interest in information technologies, cognitive processes in teaching and learning, and the educational impact of computers (Thompson, Simonson, & Hargrave, 1996). The early quantitative studies conducted are presently being accompanied by more naturalistic, qualitative research (Driscoll & Dick, 1999).

Current emphases in the field of educational technology reflect Saettler's view that any change in educational technology will be evolutionary rather than revolutionary. Feurzeig (as cited in Saettler, 1990) notes that the prospects for advancing education through information technology require, for their success, a great deal in the way of non-technological developments. These include such things as creating the necessary human resources, primarily skilled teachers who like to teach and who are knowledgeable in the subjects they teach and in the use of computer tools they teach with.

2.2.1 Project Integration Models in Schools

Just as models have been developed for general professional project management, those for achieving technology-enhanced teaching and learning continue to emerge in the literature. Dooley (1999) proposes a holistic model of adoption and diffusion based upon the Concerns Based Adoption Model Hall, Wallace, & Dossett (1973); a model dealing with the concerns of teachers about the adoption of technology and Rogers' (1995) stages in the innovation decision process. Dooley's (1999) diffusion model seeks to aid institutions with the change process. Realizing the large numbers of factors influencing technology integration, Sherry (1998) developed a structural model of technology adoption and diffusion comprised of technological, individual, organizational, and teaching and learning factors in conjunction with the learning process. The model emphasizes moving through four stages of change and the importance of support and a shared vision by educational system members. Cautioning against the "one size fits all"

model of technology professional development Brand (1998), the idea of individualizing technology learning is emerging. Howland and Wedman (2004) developed a process model for faculty development for individualizing technology learning entitled the Technology Learning Cycle. Their process-oriented perspective included the components of technology awareness, exploration and filtration, learning of technology, personal and professional application of technology, sharing and reflection.

Instructional design models guide school heads in using technology in teaching to examine and answer for themselves questions that they may not have considered in the past, Collins & Berge (2003). These authors have developed an outcomes-based model to assist teachers in structuring their schemes of work using technology for teaching and learning. Their model urges an alignment of learning outcomes, learning activities, and evaluation or feedback. The influence of instructional design is consistent in current models being developed and although a central model is not applicable to all, the various aspects of teaching, learning, professional development, and technology integration are constantly being evaluated and developed further in the quest for comprehensive and essential guidance for educators' development.

A study by Chen (2008) that involved observing and interviewing teachers in order to find out why teachers fail to integrate technology into their lessons when many would like to do so. She operated on the premise that many teachers believe in constructivist principles. Her study attempted to answer a practical question: What factors keep teachers from putting their beliefs into practice and what can be done to help alleviate the situation? Chen (2008) chose a high school in the city of Taipei because Taipei had the greatest level of technology integration in Taiwan. The school that was selected had a particular reputation for the use of technology, as well as high academic achievement when compared to other neighboring schools. Based on observations and interviews, Chen found that the first reason that teachers were unable to put their constructivist principles into practice with technology was the Influence of external Factors. There was enormous pressure from parents and administrators to achieve success on the high stakes tests that regularly punctuate the lives of Taiwanese students. Pressure to practice for these exams dominated the teaching. Using technology was seen as a distraction from the

core purpose of the school, which is to help the students pass the test. The second reason why teachers were unable to effectively apply their constructivist principles was improper theoretical understanding of constructivism, at least in regard to application. The third reason was conflicting beliefs.

2.3 Barriers to Technological Project Diffusion

One of the problems identified in the literature on adoption of technology is that some individuals might not want to accept or adopt and use technology. Fredland (2000), writing on the issue, says that attention has not been given to possible reactions of the intended recipients of the technology, nor their desires with regards to accepting new innovations. Some scholars have established that the use of computers remains low, after the installation of software and hardware, Venkatesh & Morris (2000).

Another problem that has been identified about individuals and computer adoption entails discomfort in the use of computers. It has been established that computer anxiety has an effect on the behavioral intention to adopt computer technology; Hackbarth, Grover & Yi (2003). Computer anxiety as a factor in computer adoption is well documented in the literature, Compeau & Higgins (1995); McFarland & Hamilton (2006); Venkatesh, (2000). Yet another issue identified by scholars writing on IT adoption in Sub-Saharan Africa is 'dysfunctional behavior', a situation where computers are not used effectively, adoption rates remain slow, yet governments support implementation through the purchase of relevant computer hardware and software, Odedra (1993). In conclusion, the diffusion and adoption of technology cannot be regarded as complete without the input of the individual for whom the system was put in place. Therefore it is important to find out what individuals think about adopting and using technology.

Heeks (2002), writing on the failure of information systems in Africa, says failure can be divided into two categories, total failure and partial failure. Heeks goes on to say that total failure is when an initiative never gets implemented or it is implemented and then abandoned, and partial failure is when an initiative does not achieve the major goals or it results in undesirable outcomes. Africa is lagging behind in its efforts of achieving an information society. The literature in this field has established that sub Saharan Africa is both technologically and economically least developed and that this has led to the slow

transfer and adoption of information technology; Onyango (2000) ; Udo & Edoho (2000). The barriers to IT diffusion and adoption can be divided into two types, the first being barriers at a national level and the second being barriers at an individual and organizational level. Literature on Africa and Sub Saharan Africa has mainly covered the national level of IT diffusion, which is mostly referred to as IT transfer, and has targeted social, economic, and political barriers.

2.3.1 Procurement Procedures and Laptop Project Implementation

According to Chandra (2008), a project is an investment activity that involves a current or future outlay of funds in the expectation of a stream of benefits extending far into the future. A public project is therefore one where such an investment involves the use of public funds by a Government body mandated to carry out certain specific missions to achieve specific objectives for the benefit of the greater public majority. Project implementation on the other hand refers to the process of actualizing the investment plan by putting certain specific actions and structures in place in order to operationalize the investment dream and subsequently derive the targeted benefits from the project. Chandra (2008) cites examples of public projects such as investment in a public education system like introduction of laptops to schools or expansion of the existing ICT infrastructure, development of public housing, research and development, training, and so on that are expected to generate benefits over a period of time. Such public projects can be classified either as strategic investments to address long-term organizational goals with a significant impact on the overall direction of the concerned public entity, or tactical investments to implement a current strategy as efficiently or as profitably as possible.

Chandra further states that the importance of acquiring sound procurement policy on implementation of Public projects can be viewed from three dimensions: One, their long-term effects in so far as the future character of the public organization will largely be determined by the current procurement structures; two, their irreversibility. This is because a wrong project procurement decision often cannot be reversed without incurring a substantial loss; and three, their substantial financial outlays. Chandra argues that

capital projects usually involve enormous resource outlays, all pointing to the need for effective project procurement to avert the probable losses.

According to Brown and Hyer (2010), a project is a temporary endeavor intended to solve a problem, seize an opportunity, or respond to a mandate. They further argue that the attention to the management of procurement in projects undoubtedly is growing because organizations, whether private or public, have up-scaled their project portfolios and consequently spend large sums of money on project endeavors. This is evidenced through the statistics on worldwide growth of the Project Management Institute. The life cycle of any IT project such as the school laptop project may appear obvious, but most organizations close to about 90% do not know how to effectively manage the life cycle. If the life cycle was truly embraced with the right procurement guidelines, we would see better-quality software and more efficient and effective systems. As it is, most IT organizations waste quite a bit of their budget because they have bad business procurement practices, fail to deliver on requirements, and fail to manage projects to meet schedule, cost, and quality goals. This often results in conflicts which end up in courts thereby interfering with the project plan and project budget.

As a general planning principle, Chandra (2008) asserts that unlike small projects that involve few activities, complex projects that go beyond a certain threshold level of magnitude should proceed on the basis of a sound procurement platform without which there may be far reaching and unending court cases. Sound formal procurement planning provides the basis for organizing the procurement work on the project and allocating requisition responsibilities to individuals, Brown and Hyer (2010). It is not only a means of communication and coordination between all those involved in the procurement project but also induces people to look ahead besides instilling a sense of urgency and time consciousness.

Above all planning the procurement procedures provides the basis for monitoring and control. Planning entails defining the activities, scheduling and sequencing, planning the requisite manpower and staff required in sufficient quantities and quality, planning the money that should be spent in a time-phased manner and finally planning the information

system necessary for effective communication to enhance project monitoring and control, Chandra (2008). Within the context of public procurement, section 2 6(3) of the Public Procurement and Disposal Act 2005 and Regulation 20 of the Public Procurement and Disposal Regulations 2006 provide for an elaborate structured mechanism for procurement planning for public entities. Of major significance is the requirement for the procurement plan to contain, among other things, a detailed breakdown of goods, works, or services required; a schedule of the planned delivery, implementation or completion dates for all goods, works, or services required; an indication and justification for whether it shall be procurement within a single year period or under a multi-year arrangement, an estimate of the value of each package of goods, works or services required, an indication of the budget available, sources of funding and an indication of the appropriate procurement method for each procurement requirement, Brown and Hyer (2010). Planning will also involve setting out goals, and also includes an outline of the time and cost (Chandra, 2008). Well defined objectives and policies serve as the framework for the decisions to be made by the procurement manager. Brown and Hyer (2010) have asserted that in general planning includes identifying the purpose, defining the scope, determining customer requirements (user needs), identifying tasks (key procurement activities),estimating time (delivery schedules for goods and services) and cost, assigning responsibilities and other activities.

2.3.2 Financing Issues and Laptop Project Implementation

Some of the financial barriers to the full implementation of school laptop projects echoed in all the literature consulted have to do with Africa's poverty which stems from underdevelopment, civil wars, and corruption in the government. According to Odedra (1993), Africa seems to be the lost continent of the information technologies (IT). Odedra goes on to say that Africa is the second largest continent and the least computerized. The high costs of the IT equipment and the equally high costs of maintenance for a people who live in poverty is a real challenge. Consequently, Africa does not have the infrastructure or the skilled manpower to accelerate IT adoption. This situation has often been described as the digital divide. The digital divide is measured by access to technologies, access to relevant and usable content, skills in using ICTs (knowledge and

experience in use) Kebede (2004). Most scholars approach the IT policy barrier from the economic point of view by suggesting economic empowerment through investment and trade, which should be made possible by the formulation of the right information policies, Udo & Edoho, (2000). Still other scholars emphasize the liberalization of telecommunications policy as a way of stimulating growth in IT, Hudson, (2000); Jensen, (2002). Most of Africa is characterized by a dearth of national information policies and this has contributed immensely to the failure of information technology adoption, Berman & Tettey (2001); Korac-Kakabadse, (2000), Wilson & Wong, (2003).

According to United Nations Economic Commission for Africa (2001), the cost for setting up ICT policies and strategies is big and requires concerted effort from all parties, mainly the national government for effective leadership and direction. Economic Commission for Africa (2001) goes on to say that the few IT project accounting policies that have been formulated have been marked by their lack of comprehensiveness in terms of content and coverage. Added to the lack of financial scope is the well-documented crisis in Africa of poverty, which is intensified by social, political and economic problems. Onyango (2000), summing up the magnitude of the political problems says that IT project implementation has tended to fail in Africa because there has been no thread of continuity or review process in all policy matters, instead, governments and other organs of state lurched at fever-pitch speed from one idea to another in the implementation of these imported and unadjusted development blueprints. In other words, financing IT projects in Africa has always posed problems because when blueprints and ideas from other nations are adopted without making them suitable for the culture and the situation, the implementation costs do not much.

2.3.3 Teachers Capacity and Laptop Project Implementation

Previous studies have showed teacher capacity and their lack of time as a large obstacle in IT project implementation. Having time to find resources on the web, to scan photos, and to integrate into lesson plans was often reported problematic by teachers, Karagiorgi (2005). Snoeyink & Ertmer (2001-2002) further acknowledged a skill deficiency in understanding computer and network logistical operations until they could do rudimentary tasks such as logging onto the network, saving a file, etc, teachers would not

teach any technology-related activities in the classroom. Fox & Henri (2005), at the heart of change, school leadership structure and personnel can hinder technology integration progress. Classroom practices can be halted or restricted to the school administration's lack of understanding or philosophy behind technology integration. A study of teachers in Hong Kong found that since principals did not understand the relevance behind the infusion of technology to promote more learner-centered activities, classroom practices became restricted.

Teacher attitudes and beliefs also played a major role in the amount of technology infusion in the classroom. Ertmer (2005) asserts that the decision to utilize the innovation basically lies in the fundamental beliefs teachers hold concerning technology and student achievement. If teachers did not see the relevance in the resource, they willingly chose not to implement its use. High-stakes assessment concerns were also prevalent in the minds of educators. Fox and Henri (2005) found this during a study of Hong Kong elementary and secondary classrooms. In the teacher's mind, pressures of mandated testing did not leave time to utilize the available technology. Fitzgerald & Branch, (2006). Shifts in technology uses as they relate to assessment moved from using the computers for teaching and learning to using computers as data warehouses. Such emphasis on assessments and test scores, according to Schneiderman (2004), compromises the use of the computer as a teaching and learning tool.

Finally, the culture of the organization influences the classroom teacher on how much and to what degree integration takes place. Teachers are unwilling to adopt a new technology when it is perceived to be incongruent with the total school philosophy, Hennessy, Ruthven, & Brindley (2005). A 2008 study uncovered teacher perceptions of barriers associated with technology use in the classroom, their confidence levels, types and levels of training received, and conjectures on the future of technology in the next ten years. Al-Bataineh, Anderson, Toledo, and Wellinski (2008) posed a 10-question survey to teachers in grades six through 12 in Midwestern school district. Forty -nine teachers voluntarily responded to the survey and identified several obstacles to full technology integration. With standards and accountability come teacher stresses and pressures added

to an already full set of day -to-day responsibilities. Teachers reported not having enough time to implement technology, full classrooms, and pressure to raise test scores.

2.3.4 Power Supply and Laptop Project Implementation

Another issue for the traditional classroom is access to electricity. Technology must be in the proper location for it to be usable and accessible by both teachers and students, Fabry & Higgs (1997).Statistics abound on the low density of telephone lines, and electricity, to mention but a few, Akpan (2000), Jensen (2002); Oladele (2001); Onyango, (2000). Without a one-to-one scenario, schools are limited to computer lab availability without electricity. In previous studies, educators relayed frustrations with availability of electricity hence labs when the curricular content could have been supplemented by technology, Al-Bataineh (2008).

Recommendations from respondents indicated making electricity more available to local schools in an effort to increase engagement levels and appropriate integration into instruction. Teachers longed for more job-embedded training on using the tools for effective teaching and learning and this could not be achieved without electricity. Sharing digital content asynchronously and in a collaborative environment seems to indicate the future of how technology and education should be related. However, this is not possible without adequate and reliable electricity supply as witnessed in most African schools, Al-Bataineh (2008).

2.4 Theoretical Framework of the Study

This research project report adopted the diffusion theory by Ryan and Gross (1943). The most important fact to consider in discussing diffusion theory by Ryan and Gross (1943) is that it is not one, well-defined, unified, and comprehensive theory but a collection of a number of theories, from a wide variety of disciplines, each focusing on a different element of the innovation process, combined to create a meta-theory of diffusion. The most likely reason why there is not a unified theory of diffusion is that the study of innovation diffusion is a fairly recent field. Rogers (1995) points out that a 1943 study by Ryan and Gross at Iowa State University provided the genesis of modern diffusion research.

The Ryan and Gross (1943) study, from the field of rural sociology, used interviews with adopters of an innovation to examine a number of factors related to adoption. The interview-based methodology used in the Ryan and Gross study has remained the predominant diffusion research methodology ever since (Rogers, 1995). A number of researchers from rural sociology and other disciplines (Weinstein, 1986) have built on the Ryan and Gross' work to conduct studies and develop theories related to the diffusion of innovations.

Four of the theories discussed by Rogers (1995) are among the most widely-used theories of diffusion: Innovation Decision Process; Individual Innovativeness; Rate of Adoption; and Perceived Attributes. The Innovation Decision Process theory (Rogers, 1995) states that diffusion is a process that occurs over time and can be seen as having five distinct stages. The stages in the process are Knowledge, Persuasion, Decision, Implementation, and Confirmation. According to this theory, potential adopters of an innovation must learn about the innovation, be persuaded as to the merits of the innovation, decide to adopt, implement the innovation, and confirm (reaffirm or reject) the decision to adopt the innovation. Sachs (1993) correctly concludes that while many other important theories of innovation diffusion are overlooked, the Innovation Decision Process theory remains among the most useful and well known. The individual innovativeness theory (Rogers, 1995) states that individuals who are predisposed to being innovative will adopt an innovation earlier than those who are less predisposed. On one extreme of the distribution are the innovators. Innovators are the risk takers and pioneers who adopt an innovation very early in the diffusion process. On the other extreme are the Laggards who resist adopting an innovation until rather late in the diffusion process, if ever.

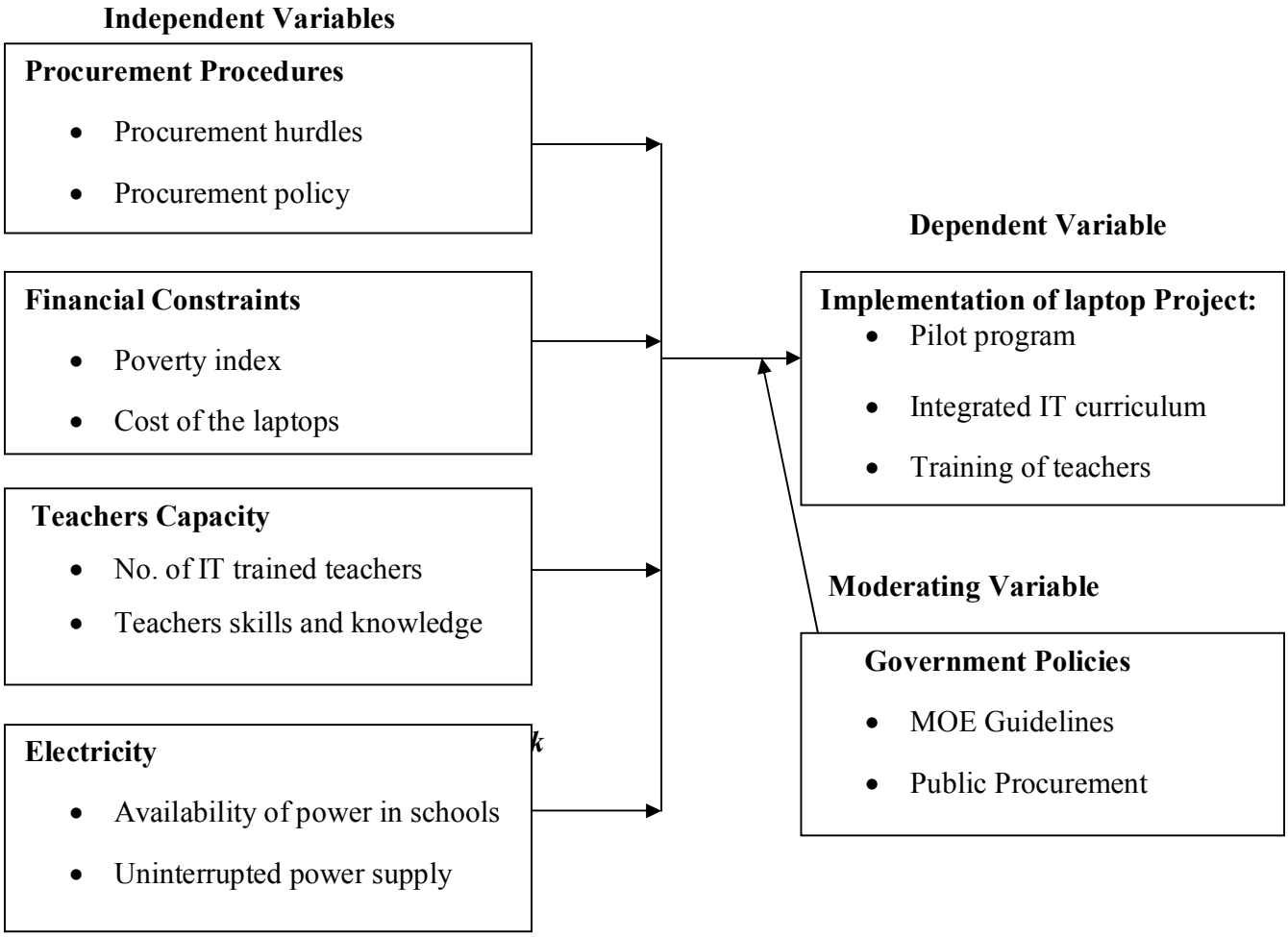
The third widely-used diffusion theory discussed by Rogers (1995) is the theory of rate of adoption. Rate of adoption theory states that innovations are diffused over time in a pattern that resembles an s-shaped curve. Rate of adoption theorizes that an innovation goes through a period of slow, gradual growth before experiencing a period of relatively dramatic and rapid growth. The theory also states that following the period of rapid growth, the innovation's rate of adoption will gradually stabilize and eventually decline (Rogers, 1995). The fourth diffusion theory is the theory of perceived attributes (Rogers,

1995) which states that potential adopter's judge an innovation based on their perceptions in regard to five attributes of the innovation. These attributes are: Trialability; Observability; Relative Advantage; Complexity; and Compatibility. The theory holds that an innovation will experience an increased rate of diffusion if potential adopters perceive that the innovation: Can be tried on a limited basis before adoption; Offers observable results; Has an advantage relative to other innovations (or the status quo); is not overly complex; and is compatible with existing practices and values.

Perceptions of compatibility, complexity, and relative advantage have been found to play a significant role in several IT-related adoption studies. Wyner (1974) and Holloway (1977) each found relative advantage and compatibility to be significant perceptions among potential adopters of instructional technology in high schools. Eads (1984) found that compatibility was the most important attribute among students and school administrators. Surry (1993) studied the perceptions of weather forecasters in regard to innovative computer based training and found relative advantage; complexity and compatibility were important adoption considerations.

2.5 Conceptual Framework

The conceptual framework displaying the relationship of the variables is as shown in the diagram below.


Independent Variables
Procurement Procedures
Procurement hurdles
Procurement policy
Financial Constraints
Poverty index
Cost of the laptops
Teachers Capacity
No. of IT trained teachers
Teachers skills and knowledge
Electricity
Availability of power in schools
Uninterrupted power supply
Dependent Variable
Implementation of laptop Project:
Pilot program
Integrated IT curriculum
Training of teachers
Moderating Variable
Government Policies
MOE Guidelines
Public Procurement

2.6 Knowledge Gap

Study	Findings	Gap
Okumus, 2001	ICT project implementation is majorly affected by procurement and politics	No specific focus on primary schools Purely based on perceptions
Githui, 2006	ICT Project implementation in Kenyan schools is only possible with stringent procurement rules and donor monitoring systems	No specific focus on school laptop project Did not interview all education stakeholders
Gakenia, 2008	No ICT project in Kenya's education sector can be implemented without the eradication of corrupt cartels	No specific focus on school laptop project Did not consider other factors affecting project implementation

2.7 Summary of Literature Review

From the literature reviewed, current emphases in the field of educational technology reflect the view that any change in educational technology will be evolutionary rather than revolutionary. These include such things as creating the necessary human resources, primarily skilled teachers who like to teach and who are knowledgeable in the subjects they teach and in the use of computer tools they teach with. Just as models have been developed for general professional project management, those for achieving technology-enhanced teaching and learning continue to emerge in the literature. Instructional design models guide school heads in using technology in teaching to examine and answer for

themselves questions that they may not have considered in the past. Failure of information systems in Africa, says failure can be divided into two categories, total failure and partial failure. The literature in this field has established that sub Saharan Africa is both technologically and economically least developed and that this has led to the slow transfer and adoption of information technology. The barriers to IT diffusion and adoption can be divided into two types, the first being barriers at a national level and the second being barriers at an individual and organizational level. The literature also focuses on the diffusion theory by Ryan and Gross (1943) which is not one, well-defined, unified, and comprehensive theory but a collection of a number of theories, from a wide variety of disciplines, each focusing on a different element of the innovation process, combined to create a meta-theory of diffusion.

CHAPTER THREE
METHODOLOGY

3.1 Introduction

This chapter discusses the methodological orientation of the study. It provides details on study design, study site and their samples population and their sample, instrument for collection of data processing and analysis.

3.2 Research Design

Cross sectional descriptive design was adopted in this study. This design was suitable for this study because it involves collection of cross-sectional data at one point in time. It did not require time series over several monitoring rounds of data. Zikmund (2003) says surveys provide quick, inexpensive, efficient and accurate means of accessing information about the population. According to Kothari (2004), descriptive research studies are concerned with describing the characteristics of a particular individual or group of people.

3.3 Target Population

A population refers to an entire group of individuals, events or objects that have a common observable characteristic (Orodho, 2003). A population describes the parameters whose characteristics the research will attempt to describe. The population for the purpose of this study was the education officials in Nairobi County. The study specifically targeted head teachers and teachers of public primary schools in Nairobi County as well as the education officials of MOE and KICD. Nairobi County has 237 public primary schools; the study focused on two constituencies which are Langata and Westlands which have a total of 62 public primary schools (Nairobi County Government, 2014).There were a total of 150 Ministry of education officials and 50 KICD officials in Nairobi county (Gakenia, 2008).

3.4 Sampling Procedure

The study adopted cluster sampling to pick the head teachers and teachers from the constituencies in Nairobi County as shown below. The study purposively picked 2 constituencies out of the 17 constituencies. The two constituencies were Westlands and

Langata; which were chosen due to the researcher's prior knowledge of the areas; 30% of the schools in the two constituencies were selected to form a sample size of 19 schools. However, simple random sampling was used to select four respondents; one head teacher and three regular teachers; from every sampled school; giving a total of 76 respondents, as the typical (i.e median) government primary school in Kenya has around 11 teachers (2012 Kenya policy brief-Uwezo) 30% of the teachers in the two constituencies were selected to form a population size of 209 teachers. From both the MOE and the KICD, 20% of the officials population formed the sample size as shown below. According to Mugenda and Mugenda (2003), a sample size of 10-30% is statistically significant for a considerably small population size.

Table 3.1: Sample Size for Schools and Constituencies

Description	**Population Size**	**Sample Size**	**Remarks**
Constituencies	17	2	Purposive sampling
Schools	62	19	30%
Total		21	

Table 3.2: Sample Size for Respondents

Description	**Population Size**	**Sample Size**	**Remarks**
Respondents	209	76	Simple random
MOE Officials	150	30	20%
KICD Officials	50	10	20%
Total	409	116	

3.5 Methods of Data Collection

The study adopted a semi-structured questionnaire and an interview guide. The questionnaire contained two parts; first part dealt with demographic information while the second part dealt with the school laptop project. The questionnaire was administered to the teachers while the interview guide was used to obtain information from the officials at the MOE and KICD.

3.5.1 Data Collection Procedure

The researcher obtained an introduction letter from Nairobi University and a research permit from the National Council for Science and Technology. The permit was presented to the County Education Officer Nairobi County so as to be allowed to conduct the study. After this, the researcher booked appointments with the respondents to visit and administer the questionnaires and interview guides. The researcher personally administered the instruments to all the respondents. The data for this study was collected within a maximum period of two months.

3.5.2 Pilot Study

According to Galloway (1997), it is difficult to give the exact number for the pilot group, but as a rule of thumb, it is recommended that researchers pilot 5-10% of the final sample. The research questionnaires and interview guides were piloted using the split half technique; where a sample of teachers and officials from Westlands sub-county that were not included in the final study were piloted. According to Teijlingen and Hundley (2001), conducting a pilot study might give advance warning about where the main research project could fail, where the research protocols may not be followed, or whether proposed methods or instruments are appropriate or too complicated. Based on the pilot study the questionnaires were refined by removing any questions that provided unwanted or irrelevant information. The pilot study also allowed the researcher to familiarize herself with data collection procedures.

3.6 Validity

The researcher checked the instrument for content validity, that is, the extent to which the research instrument measures what it purports to measure. Specifically, the representation of the content on the dependent and independent variables through relevant questions was checked. The validity of the research questionnaire was ascertained by consultations to ascertain the items in it suited the intended in relation to school laptop project.

3.7 Reliability

Reliability refers to the consistency of measurement to another. The instrument was pilot tested on secondary school teachers in two schools in Nairobi-county, which were not

included in study, to establish their reliability. The researcher then modified, restructured and eliminated any ambiguous items.

3.8 Methods of Data Analysis

The researcher used both qualitative and quantitative analysis after collection of data from the field. More emphasis was on qualitative analysis as some data collected did not require quantifiable information but simply analyzing information in a systematic way in order to come to some useful conclusion and recommendations. In qualitative analysis data was analyzed using descriptive statistics. Frequency distribution tables and percentages were adopted to present the data because they are easy to read and interpret. The relationship between the variables was tested using the Pearson's correlation technique.

3.9 Ethical Considerations

Researchers whose subjects are people or animals must consider the conduct of their research and give attention to ethical issues associated with carrying out their research (Kombo and Tromp, 2006). Only people conducting the survey knew the identity of the participants. The researcher obtained informed consent from any subject used in the study and ensured that all subjects participated voluntarily. The researcher fully explained the research in advance and debriefed the subjects afterwards. Researcher accepted individual responsibility for the conduct and consequences of this research and maintained openness and honesty in dealing with research subjects.

3.10 Operational Definition of Variables

Table 3.2: Operational definition of variables

Objectives	Types of Variables	Indicators	Measurement	Scale	Type of analysis	Tools of analysis
To determine how procurement procedures influence the implementation of the school laptop project	Independent - procurement procedures	Procurement Policy	Existence of the policy	Ordinal	Descriptive	Mean
		No. of court cases	Rate of occurrence of cases	Ordinal	Descriptive	Percentage
	Dependent- School laptop project	Implementation	Success rate	Ordinal	Descriptive	Percentage
To assess how financing issues influence the implementation of the school laptop project	Independent- Financing issues	Poverty levels	Description of poor situations	Ordinal	Descriptive	Mean
		Cost	The deficit amounts needed	Ordinal	Descriptive	Mean
To examine how teachers capacity influence the implementation of the school laptop project	Independent- Teachers capacity	No. IT trained	Quantity of trained teachers	Nominal	Descriptive	Mean
		Skills and Knowledge	Level of training	Nominal	Descriptive	Mean
To assess how power supply influence the implementation of the school laptop project	Independent- Electricity	Availability of power	Presence of electricity	Ordinal	Descriptive	Mean
		Uninterrupted supply	Number of power outages	Ordinal	Descriptive	Mean

CHAPTER FOUR :
DATA ANALYSIS, PRESENTATION AND INTERPRETATION

4.1 Introduction

This chapter presents the results based on the study and discusses its interpretation. The chapter begins by presenting these findings highlighting the key determinants and their effects on implementation of the school laptop project. This is presented and discussed in line with the objectives of this study. The analysis tends to answer the research questions; how do procurement procedures, financing issues, teacher capacity and electricity supply influence the implementation of the school laptop project?

4.2 Characteristics of the respondents

Out of the questionnaires distributed, only seventy two were fully filled with relevant information that could be entered and analyzed. This represents a response rate of 94.73%.

4.2.1 Gender of the respondents.

Among the teacher respondents, both female and male shared the platform unequally on a 20% and 80% basis respectively. This basically implies that the number of female respondents was higher than that of their male counterparts. This was not purposive or preplanned but occurred randomly. This result implies that the teaching career in Kenyan primary schools is female dominated. The ratio of male to female respondents in this study is better compared to that of Nyaboga, Basweti, Miyienda and Onsongo (2012) who found out that 260(96.29) of the respondents were female while 10(3.71) were male in their study of ICT project diffusion in primary schools in Kisii town.

Table 4.1: Gender of respondents

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Female	58	80.0	80.0	80.0
	Male	14	20.0	20.0	100.0
	Total	**72**	**100.0**	**100.0**	

4.2.2 Age of the Respondents

Forty seven percent of the respondents were aged 30-39 years while only 8% of the respondents were aged 50-59 years. Those aged 18-29 years were 28% while those aged 40-49 years were 17%. Approximately most of the respondents (75%) were below 40 years thus young and with a fast hand grasp on IT related issues since the introduction of ICT training in the teacher training colleges is a recent phenomenon.

Table 4.2: Age

	Frequency	Percent	Valid Percent	Cumulative Percent
18-29	20	28.0	28.0	28.0
30-39	34	47.0	47.0	75.0
40-49	12	17.0	17.0	92.0
50-59	6	8.0	8.0	100.0
Total	**72**	**100.0**	**100.0**	

4.2.3 Highest level of education attained.

Fifty percent of the respondents were P1 teachers while a close 42% of the respondents had graduate qualifications. Only 8% had diploma qualifications. Approximately all of the respondents were literate and with a fast hand grasp on IT project implementation.

Table 4.3: Education attained

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	P1	36	50.0	50.0	50.0
	Graduate	30	42.0	42.0	92.0
	Diploma	6	8.0	8.0	100.0
	Total	**72**	**100.0**	**100.0**	

4.2.4 Duration the respondent has worked.

Sixty percent of the respondents had worked in their current positions for one to five years, thirty percent (30%) for five to ten years while only ten percent (10%) had worked for more than ten years. The majority of the respondents (70%) had worked for more than five years which validated the information collected on the basis of experience of the respondents within the respective schools since the laptop project is a recent objective set by the current government which is hardly three years into office.

Table 4.4: Duration the respondent has worked in the current position

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	0-5 Years	31	43.0	43.0	43.0
	5-10 Years	34	47.0	47.0	90.0
	10-15 Years	7	10.0	10.0	100.0
	Total	**72**	**100.0**	**100.0**	

4.3 Implementation of the School Laptop Project

The study sought to determine the factors that influence the implementation of the school laptop project. The four factors studied include procurement procedures, financing issues, teacher's capacity and electricity supply. The results are discussed below.

4.3.1 Procurement Procedures and School Laptop Project

Table 4.5 presents findings of perception on procurement factors that derail the school laptop project implementation; a more detailed discussion of the findings is presented later.

Table 4.5: Procurement Procedures and the School laptop project

Factor	Response	Percentage	Mean	Standard
A Specific procurement policy is available for use in the school laptop project	Strongly Agree	27.27%	2	0.77
	Agree	45.45%		
	Neutral	27.27%		
	Total	100%		
Previous procurement attempts for the laptop project have been very successful	Strongly Disagree	36.36%	2.7	1
	Disagree	36.36%		
	Neutral	18.18%		
	Agree	9.09%		
	Total	100%		
There are no reported cases regarding procurement bottlenecks for laptop project	Strongly agree	45.45%	1.8	0.98
	Agree	36.36%		
	Neutral	9.09%		
	Disagree	9.09%		
	Total	100%		
Previous court cases have delayed supply and delivery of procured goods and services for the	Agree	54.54%	2.6	0.81
	Neutral	27.27%		
	Disagree	18.18%		
	Total	100%		
Current procurement policy does not engage all the stakeholders	Strongly Agree	27.27%	2.0	0.89
	Agree	54.54%		
	Neutral	9.09%		
	Disagree	9.09%		
	Total	100%		
Procurement delays are caused by vested interests rather than policy	Agree	17.31%	2.4	0.79
	Neutral	64.51%		
	Disagree	18.18%		
	Total	100%		
	Neutral	27.27%		
	Disagree	18.18%		
	Total	100%		

From the findings presented in Table 4.5, the respondents agreed that a specific procurement policy is available for use in the school laptop project implementation, the mean was 2. This is in line with the government procurement regulations to ensure cost cutting and increased efficiency. The respondents were also asked to rate if previous procurement attempts for the laptop project have been very successful. They disagreed.

The mean of the responses was 2.7 denoting disagreement; checks and balances are essential to ensure right applications to the procurement processes and the eventual tender award of the entire laptop project.

Asked whether budget there are reported cases regarding procurement bottlenecks for laptop project, respondents agreed; the mean response was 1.8. This is in line with high procurement stakes associated with the implementation of the laptop project. Court injunctions are a slowing factor to project implementation in any organization. The respondents answer to previous court cases having delayed supply and delivery of procured goods and services for the laptop project had a mean of 2.6 which denoted neutrality. Slightly more than half of the respondents agreed that court cases have delayed supply and delivery of procured goods and services with the rest being neutral or disagreeing.

Another factor was that the current procurement policy does not engage all the stakeholders; the study sought to establish whether it was an important factor to consider in successful laptop project implementation. The mean was 2, indicating that the respondents believe that current procurement policy does not engage all the stakeholders. Making stakeholders more accountable involved and in control can help increase laptop project procurement success. Asked whether procurement delays are caused by vested interests rather than policy, the mean was 2.4 indicating that respondents agreed. This basically implies that political interests override strategic plans thus leading to flawed procurement procedures and corruption that result in serious delays.

4.3.2 Financial Constraints and the School Laptop Project

Table 4.6 presents findings of perception on procurement factors that derail the school laptop project implementation; a more detailed discussion of the findings is presented later.

Table 4.6: Financial Constraints and the School laptop project

Aspect	Response	Percentage	Mean	Standard
The poverty levels in this area slacken the laptop project	Strongly	72.72%	1.2	0.47
	Agree	27.27%		
	TOTAL	100%		
The school fund is not adequate to cater for the laptop project	Agree	27.27%	3.1	0.99
	Neutral	36.36%		
	Disagree	27.27%		
	Strongly	9.09%		
	TOTAL	100%		
The laptops recommended for the project are too expensive	Disagree	18.18%	4.8	0.40
	Strongly	81.815		
	TOTAL	100%		
The software associated with the project is too expensive to maintain	Strongly	72.72%	1.3	0.47
	Agree	27.27%		
	TOTAL	100%		
The cost associated with repairing and servicing the laptops is high	Neutral	18.18	4.2	0.75
	Disagree	45.45		
	Strongly	36.36		
	Total	100%		

All the respondents strongly agreed that the poverty levels in the area slacken the laptop project implementation. The mean score was 1.2 denoting strong agreement. Asked whether the school fund is not adequate to cater for the laptop project, the mean score was 3.1 denoting neutral. The respondents strongly disagreed that the laptops recommended for the project are too expensive, the mean score was 4.8.

Asked whether the software associated with the project is too expensive to maintain, the respondents strongly agreed; with a mean of 1.3.However the respondents disagreed that the cost associated with repairing and servicing the laptops is high; the mean was 4.2.

4.3.4 Teacher Capacity and the School Laptop Project

Table 4.7 presents findings of perception on procurement factors that derail the school laptop project implementation; a more detailed discussion of the findings is presented later.

Table 4.7: Teachers Capacity and the School laptop project

Factor	Response	Percent	Valid	Cumulative
Teachers are properly trained in the basic IT skills	Yes	19.35	19.35	19.35
	No	80.65	80.65	100.0
Majority of the teachers are equipped with the IT	Yes	32.26	32.26	32.26
	No	67.74	67.74	100.0
Teacher's capacity determines the success of the	Yes	87.10	87.10	87.10
	No	12.90	12.90	100.0
Trained under supervision of instruction for the laptop	Yes	32.26	32.26	32.26
	No	67.74	67.74	100.0

From the findings above, over 80% of the respondents declined that teachers are properly trained in basic IT skills, thereby casting doubt on the success of the school laptop project implementation since the teachers are one of the core implementers of the laptop project.

When asked whether majority of the teachers are equipped with IT curriculum, more than half of the respondents (67%) declined implying that most of the teachers are not well equipped with the IT curriculum. This further casts doubt on the laptop project readiness hence implementation.

Majority of the respondents (87%) confirmed that indeed teacher's capacity determines the success of the laptop project, with only a small number (12%) declining. However, only 32% of the respondents had been personally trained under supervision of instruction for the laptop project indicating that over half of the respondents were not adequately prepared to offset the laptop project.

4.3.5 Electricity and the School laptop project

This section was meant to establish the electricity challenges to school laptop implementation. The respondents were given factors and asked to rate them, 1 indicating strong agreement, and 5, strong disagreement**.** The findings are presented in Table 4.8; a detailed discussion is discussed after that**.**

Table 4.8: Electricity and the School laptop project

Factor	Response	Percentage	Mean	Standard
Lack of power supply in this area slackens the laptop project	Strongly	27.27%	1.9	0.70
	Agree	54.45%		
	Neutral	27.27%		
	TOTAL	100%		
The school runs on a generator which is not adequate for the laptop project	Strongly	58.06%	1.5	0.52
	Agree	41.94%		
	TOTAL	100		
Frequent power interruptions in the area affect the laptop project	Agree	27.27%	3.1	0.91
	Neutral	36.36%		
	Disagree	27.27%		
	Strongly	9.09%		
	TOTAL	100%		
The area is inaccessible for power lines and cannot support the laptop project	Agree	54.54%	3.1	0.94
	Neutral	18.18%		
	Disagree	27.27%		
	Total	100%		
Frequent power surge and power outs impair the laptops	Strongly	9.67%	2.1	0.6
	Agree	80.64%		
	Neutral	6.46%		
	Strongly	3.23%		
	TOTAL	100%		

The respondents agreed that the lack of power supply in an area slackens the laptop project; the mean response was 1.9, denoting agreement. The respondents strongly agreed that indeed some schools run on a generator which is not adequate for the laptop project; the mean score was 1.5. Good organizational leadership involves analysis of value addition by any new project.

Asked if the frequent power interruptions in the area affect the laptop project, the respondents were not sure; the mean response was 3.1 denoting that they were neutral. The respondents disagreed that the area is inaccessible for power lines and cannot support the laptop project, the mean score was 3.1 denoting disagreement. However, when asked if frequent power surge and power outs impair the laptops, the mean score was 2.1

denoting agreement. This implies that electricity is a very important factor in Laptop project implementation.

4.4 Regression analysis

Table 4.9 below presents the regression analysis.

Table 4.9: Regression analysis

Model		Standardized Coefficients	t	Sig.
		Beta		
1	(Constant)		-0.209	.78
	Do procurement procedures influence implementation of school laptop project	.587	5.984	.046
	Do financial constraints influence implementation of school laptop project	.251	6.587	.045
	Ever considered influence of teacher capacity on implementation of school laptop project	.293	4.421	.041
	Do power supply influence implementation of school laptop project	.196	7.337	.023

The beta coefficients give the rate of deviations or change on the dependent variable (implementation of the laptop project) that was produced by a change on the independent variables. Here, procurement procedures takes a lead with 0.587 deviation followed by teachers capacity at 0.293, then financial constraints at 0.251 and power supply at 0.196. The researcher thus concluded that procurement procedures, financial constraints and teacher's capacity had the major impact on implementation of the laptop project.

4.4.1 The Coefficient of Determination

Table 4.10 below presents the Coefficient of determination.

Table 4.10: The Coefficient of Determination

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.587(a)	.395	.179	11.858

In data analysis, the larger the R the stronger the relationship between the dependent variable versus independent variables. R Square, the coefficient of determination, is the squared value of the multiple correlation coefficients. Here, it showed that about half the variation in the relationship is explained by the model. The value of R was 0.587 and R square was 0.179(17.9%) as shown in the table below. Since the value of R square is less than 50%, the researcher deduced that the proportion of variation associated to the independent variables had a moderate effect.

4.5 Response from Education Officials and the KICD officials

Content analysis of the interview guide to the officials revealed that most of them have lost faith in the laptop project, with most of them expressing dissatisfaction with the slow pace of implementation of the laptop project. Some of the factors mentioned as hindering the implementation of the process include political interference, corruption, poor oversight, procurement bottlenecks, and lack of funds, poverty, laptop security, electricity and rampant impunity. The main cause of slow implementation of the laptop project according to most respondents was corruption and rampant impunity. Moreover, most of the respondents think that the procurement processes for the laptop project has not been smooth due to political interests and corruption. Others think that the procurement process has been strategically delayed by the government agencies to stall the process due to lack of funds. However, the respondents insist that most schools in the country are not yet ready for the implementation of the laptop project because of inaccessibility and poor infrastructure that impedes the roll out of electricity to such schools. Others attribute poverty levels and insecurity to lack of school readiness.

Political goodwill is lacking in the Kenyan laptop project, both from the government and the opposition, according to most respondents. The respondents further assert that the

project is only a mirage, and that it is not viable with the current state of affairs in Kenya. They attribute this to corruption, inadequate funds and lack of political goodwill. They further feel that most schools in the country are ill equipped for the implementation of the laptop project particularly due to laptop insecurity; especially in rural and slum settings.

CHAPTER FIVE
SUMMARY, DISCUSSIONS, CONCLUSIONS AND RECOMMENDATIONS

5.1 Introduction

This chapter gives a summary of the findings and an analysis of the results and findings focusing on the objectives, research hypothesis/ questions, recommendations and the various areas to focus on for further research.

5.2 Summary of Findings

The study established that procurement procedures with 0.587 deviations had a major role to play in the implementation process and had led to most of the delays in the implementation of the laptop project, this delays were characterized by several court cases that nullifies the procurement process.

Financial constraints also had an influence on the implementation of the school laptop project with a deviation of 0.251, despite the fact that the money for the laptop project had been provided, the high cost of the laptops raise concerns and influenced the attitude and perception of the key stake holders hence this would slow the adoption laptop projects in schools.

Teacher capacity also influences the laptop implementation process with a deviation of 0.293. Teacher capacity had the second largest deviation hence it the preparedness of the teachers on integrating the ICT Curriculum in schools was important in the implementation process; not all teachers had been trained and prepared for the ICT integrations in schools.

Power supply had the least influence on the laptop implementation process with a deviation of 0.196, for the laptop project to be fully implemented the necessary infrastructure had to be put in place to facilitate it hence source of power or electricity is key in the implementation process, so far 50% of the schools had a source of power.

The result of automated data analysis (SPSS) reveals that procurement procedures, financial constraints, teacher's capacity and power supply can be held responsible for influencing implementation of the school laptop project. The F-statistic (ANOVA) of the model indicates that the model has closeness of fit which means that the model is

statistically significant. The estimated parameters are statistically significant. The adjusted R squared coefficient (0.179) which is the coefficient of determination indicates that the explanatory variables accounted for 17.9% of the influence of school laptop project. This could be described as a moderate effect but the outcome of such a magnitude could cripple the entire implementation process for the school laptop project. Some of the factors mentioned by the ministry and KICD officials as hindering the implementation of the process include political interference, corruption, poor oversight, procurement bottlenecks, lack of funds, poverty, laptop security, electricity and rampant impunity. Out of the listed factors, the main cause of slow implementation of the laptop project according to most respondents was corruption and rampant impunity.

5.3 Discussion of Findings

This paper attempts to determine the factors influencing implementation of the school laptop project. The findings were in line with a priori expectation expressed by Blanchard (1997), Tamtom (2002) and Daferighe (2009).An important finding is that the explanatory variables in the model result in the direct influence on the implementation of the school laptop project. The paper also provides preliminary evidence regarding the relative importance of the explanatory variables on implementation of the school laptop project in Kenya. This finding is in line with four of the theories discussed by Rogers (1995) among the most widely-used theories of diffusion: Innovation Decision Process; Individual Innovativeness; Rate of Adoption; and Perceived Attributes.

Specifically, the findings suggest that a proper procurement policy was the most important variable influencing implementation of the school laptop project in Kenya. Political goodwill is lacking in the Kenyan laptop project, both from the government and the opposition. The Innovation Decision Process theory (Rogers, 1995) states that diffusion is a process that occurs over time and can be seen as having five distinct stages. The stages in the process are Knowledge, Persuasion, Decision, Implementation, and Confirmation. The laptop project is only a mirage, and it is not viable with the current state of affairs in Kenya. This is attributed to corruption, inadequate funds and lack of political goodwill. Moreover, the schools are ill prepared for the laptop project implementation.

5.4 Conclusions

The number of female respondents was higher than that of their male counterparts. This was not purposive or preplanned but occurred randomly. Approximately most of the respondents (75%) were below 40 years thus young and with a fast hand grasp on IT related issues since the introduction of ICT training in the teacher training colleges is a recent phenomenon. Approximately all of the respondents were literate and with a fast hand grasp on IT project implementation.

Based on the results of the regression analysis, procurement procedures take a lead followed by teacher's capacity, then financial constraints and power supply in terms of deviations on the implementation of the laptop project. The researcher thus concluded that procurement procedures, financial constraints and teacher's capacity had the major impact on implementation of the laptop project. However, since the value of R square is less than 50%, the researcher deduced that the proportion of variation associated to the independent variables had a moderate effect

5.5 Recommendations

1. This study recommends that: the government of Kenya strengthens the POA (procurement oversight authority) and KICTB (Kenya ICT Board) to come up with policies to control the external factors that interfere with procurement procedures and processes for the laptop project with a possible measure to cushion the entire laptop project from international monetary fluctuations.

2. The study further recommends that the Ministry of education develops a policy framework that outlines the readiness indicators for each primary school with regard to the laptop project implementation. Conclusively, government should implement policies that will check on procurement policy manipulation, regulate political

interference through infrastructural development and improved standards of management.

3. This study also recommends the introduction and critical analysis of theories relating to school laptop project implementation in primary schools in third world countries with the focus being on ICT school readiness theory, ICT stakeholder involvement theory and ICT financing theory.

4. In terms of practice, the study recommends that the Ministry of education approaches the laptop project with political goodwill, proper organization and workable timeframe. Moreover, the government should build the capacity of the teachers to better prepare them to handle the new ICT curriculum. Creation and strengthening of an independent public institution to monitor project time lines and even provide framework for handling delayed projects in Kenya just like the Central bank (CBK) does to banks would go a long way in enhancing the laptop project implementation. Also, electricity roll out to rural schools should be enhanced in order to ensure preparedness, involvement and acceptance of the school laptop project.

5.6 Suggested areas for further research

From the study and subsequent conclusions, the researcher recommends a further research on:

1. The impact of government policies on implementation of the school laptop project in Kenya.

2. Readiness indicators for the implementation of school laptop project in Kenya.

REFERENCES

Akpan, P. (2000). Africa in the age of a global network society. *African Studies Quarterly, 4*(2).

Al-Bataineh, A., Anderson, S., Toledo, C., & Wellinski, S. (2008). *A Study of Technology Integration in the Classroom. International Journal of Instructional Media, 35, 381-387.*

Becker, H. J. (2000a). Findings from the Teaching, Learning, and Computing Survey: Is Larry Cuban Right? Education Policy Analysis Archives, 8(51), 2-32.

Berman, B.J. & Tettey, W.J. (2001). African states, bureaucratic culture and computer fixes. *Public Administration and Development, 21*, 1-13

Brand, G.A. (1998). What research says: Training teachers for using technology. *Journalof Staff Development, 19*(1), 10-13.

Brown, E., & Hyer, S. (2010). The Effects of Ubiquitous Procurement on Technology Learning Projects: A Systematic Review.

Cattagni, A. L., & Farris, D. (2001). What factors facilitate teacher skill, teacher morale, and perceived student learning in technology-using classrooms? Computers &Education, 39, 395-414.

Chandra, G. A. (2008). Teacher Adoption of Technology: A Perceptual Control Theory Perspective. *Journal of Technology and Teacher Education, 9*(1), 5-30.

Chen, C. (2008). Why do teachers not practice what they believe regarding technology integration? Journal of Educational Research, 102 (1), 65-75.

Collins, B. (1996). Using technology to support education reform. Washington, DC: Office of Educational Research and Improvement.

Collins, M.P., & Berge, Z.L. (2003). Using instructional design for faculty development in a post-secondary, technology-enhanced environment. *Educational Technology,43*(6), 21-27.

Compeau, D.R., & Higgins, C.A. (1995). Computer self-efficacy: Development of a measure and initial test. *Management Information Systems Quarterly, 19*(2), 189-211.

Cuban, L., Kirkpatrick, H., & Peck, C. (2001). High access and low use of technologies

Cuban, L., Kirkpatrick, H., & Peck, C. (2001). High access and low use of technologies in high school classrooms: Explaining an apparent paradox. *American Educational Research Journal, 38*(4), 813-834.

Dooley, K.E. (1999). Towards a holistic model for the diffusion of educational technologies: An integrative review of educational innovative studies. *Educational Technology & Society, 2*(4).

Driscoll, M.P. (2002). Psychological foundations of instructional design. In R.A. Reiser &

Driscoll, M.P., & Dick, W. (1999). New research paradigms in instructional technology: An inquiry. *Educational Technology Research & Development, 47*(2), 7-18.

Eads, G. M. (1984). Manipulation of innovation attributes and impact on attitude formation. Dissertation Abstracts International, 45, 2325A. (University Microfilms No. 84-26, 311).

Ertmer, P. A. (2005). Teacher pedagogical beliefs: The final frontier in our quest for technology integration? *Educational Technology Research and Development,53*(4), 25-39.

Fabry, M., & Higgs, K. (1997). Commonalities and distinctive patterns in teachers' integration of computers. American Journal of Education, 101(May 1993), 261-315.

Fitzgerald, M. A., & Branch, R. M. (*2006*).*Educational media and technology yearbook* Westport, CT: Libraries Unlimited.

Fox, R., & Henri, J. (2005). Understanding teacher mindsets: IT and change in Hong Kong schools. *Educational Technology & Society, 8*(2), 161-169.

Fredland O'Creevy, M. (2000). Middle Management Resistance to Strategic Change Initiatives: Saboteurs or Scapegoats? In: Flood, P.C., Dromgoole, T., Carroll, S.J., Gorman, L. (Eds.) Managing Strategy Implementation. Oxford: Blackwell Publishers.

Gakenia K. N. (2008). Corporate Projects and Performance in the Education Sector in Kenya. Unpublished MBA Project, Kenyatta University.

Githui W. M. (2006). Public Projects in Public Primary School in Isiolo. Unpublished MBA Project, Maseno University.

Glennerster, J., & Kremer, Y. (2011). The digital pencil: One-to-one computing for children. Mahwah, NJ: Lawrence Erlbaum.

Hackbarth, R. A., Grover, J. B. and Yi P., (2003), "Segmentation: Identification, Intuition, and Implementation of Computer technology," Industrial Business Management, 33 (NOV), 779-85.

Hall, G.E., Wallace, R.C., & Dossett, W.A. (1973). *A developmental conceptualization of the adoption process within educational institutions.* Austin, TX: Research and Development Center for Teacher Education, The University of Texas.

Harison, C. (2002). The Effects of Ubiquitous Projects: A Systematic Review.

Heeks, R. (2002). Information Systems and Developing Countries: Failure, Success, and Local Improvisations. *The Information Society, 18*(2), 101-112.

Hennessy, S., Ruthven, K., & Brindley, S. (2005). *Teacher perspectives on integrating ICT into subject teaching: Commitment, constraints, caution, and change. Journal of Curriculum Studies, 37(2), 155-192*.

Holloway, R. E. (1977). Perceptions of an innovation: Syracuse university Project Advance. Dissertation Abstracts International, 39, 572-573A. (University Microfilms No. 78-11, 656).

Howland, J., & Wedman, J. (2004). A process model for faculty development: Individualizing technology learning. *Journal of Technology and Teacher Education, 12*(2), 239-263.

Hudson, H.E. (2000). From African village to global village: Lessons in bridging the African digital divide.

in high school classrooms: Explaining an apparent paradox. American Educational Research Journal, 38(4), 813-834.

J.V. Dempsey (Eds.), *Trends and issues in instructional design and technology*. Upper Saddle River, NJ: Pearson Education, Inc.

Jamali, A., Mirshak, O (2007). Muligheter prosjekter - Del II ("Opportunities in projects - Part 2", in Norwegian). Prosjektledelse (4), 28-30.

Jensen, M. (2002). Information and communication technologies (ICTs) in Africa-A status report. UN ICT Task Force, "Bridging the Digital Divide in the 21st Century". Third Task Force Meeting, United Nations headquarters. 30 September-1 October 2002.

Karagiorgi, Y. (2005). Throwing light into the black box of implementation: ICT in Cyprus elementary schools. *Educational Media International, 42*(1), 19-32.

Kebede, N. O. (2004). IT Adoption in Africa. Cambridge University Press

Kombo, D., & Tromp, D. (2006). Proposal and Thesis Writing: An Introduction. Nairobi: Pauline's Publications Africa

Korac-Kakabadse, N., Kouzmin, A., & Korac-Kakabadse, A. (2000). Information technology and development: Creating "IT harems", fostering new colonialism or solving "wicked" policy problems? *Public Administration and Development, 20(3),* 171-184.

Kothari, C.R., 2004. Research Methodology: Method and Techniques. 2nd Edn., New Age International (P)Ltd., New Delhi

Merrow, J. F. (1995). Technology in its place: Successful technology infusion in schools. San Francisco: Jossey-Bass.

Mutua, K. (2013). Review of Harmonization Curriculum for School Laptop Project. Unpublished article. Retrieved from www.asacad.ke on14/05/2014

Odedra, M., Lawrie, M., Bennett, M., & Goodman, S. (1993). Sub-Saharan Africa: A technological desert. *Communications of the ACM, 36* (2), 25-29.

Okumu Mc. P. (2009). Procurement Hitches Affecting Ministry of Education Projects in Kenya. Unpublished MBA Project, Daystar University.

Oladele, B.A. (2001). *The imperatives of challenges for Africa in the knowledge age: Status and the role of national information policy. Proceedings of the 67th IFLA Council and General Conference, August 16-25.*

Onyango, R.A.O. (2000). Global information and Africa: On the crest of a mirage? *Library Management, 21*(4), 197-204.

Orodho, A. J. (2008). Techniques of Writing Research Proposals and Reports in Education and Social Sciences. Maseno: Kanezja Publishers.

Raps, Y., S., & Kauffman, J. (2005). Conditions for Classroom Technology Innovations. Teachers College Record, 104(3)

Rogers, E. M. (1995). Diffusion of innovations (4th ed.). New York: The Free Press.

Ryan, B. & Gross, N. C. (1943). The diffusion of hybrid seed corn in two Iowa communities. Rural Sociology (8) 15-24.

Sachs, S. G. (1993, February). The Diffusion of Innovations: The Overlooked Literature. Paper presented at the meeting of the Association for Educational Communications and Technology, New Orleans, LA.

Saettler, P. (1990). *The evolution of American educational technology*. Englewood, CO:Libraries Unlimited, Inc.

Schneiderman, M. (2004). *What does SBR mean for educational technology? THE Journal. 31(11), 30-36.*

Sherry, L. (1998). An integrated technology adoption and diffusion model. *International Journal of Educational Communications, 4*(2/3), 113-115.

Snoeyink, R., & Ertmer, P.A. (2001-02). Thrust into technology: How veteran teachers respond. *Journal of Educational Technology Systems, 30*(1), 85-111.

Surry, L. (1993, August 4, 1999). The Technology Puzzle: Why Is Greater Access Not Translating Into Better Classroom Use? Education Week, pp. 68, 47

Teachers Service Commission (2013). Records on teachers and quality Assurance Staff.

Thompson, A.D., Simonson, M.R., & Hargrave, C.P. (1996). *Educational technology-Areview of the research* (2nd ed.). Bloomington, IN: Association for Educational Communications and Technology.

Udo G. J., & Edoho, F. M. (2000). *Information technology transfer in African nations: An economic development mandate*. *The Journal of Technology Transfer, 25 (3), 329- 342.*

United Nations Economic Commission for Africa. (2001). African Information Society Initiative: An Action Framework to Build Africa's Information and Communication Infrastructure.

Uwezo Kenya Report (2012). Are our children learning technology in the classroom? Kenya.

Venkatesh E.M and Morris R.K. (2000). Effective computer adoption in project management : traditional, agile, extreme. Fifth ed. Indianapolis, Wiley Technology Pub.

Venkatesh, V. (2000). Determinants of perceived ease of use: Integrating control, intrinsic motivation, emotion into the technology acceptance model. *Information Systems Research, 11* (4), 342-365.

Weinstein, B. A., (1986). Information Ecologies: Using Technology with Heart. Cambridge, MA: MIT Press.

Wiley, T. (2005). Integrating Projects into K-12 teaching and learning: current knowledge gaps and recommendations for future research. Educational Technology Research & Development, 55, 223-252.

Wilson, D. B., & Wong, L. (2003). Tinkering toward utopia: a century of public school reform. Cambridge, Mass: Harvard University Press.

Wilson, O. C. (2008). Business Strategy: Planning and Implementation. 3rd ed. New York: McGraw-Hill College Div.

Wyner, N. B. (1974). A study of diffusion of innovation: Measuring perceived attributes of an innovation that determine rate of adoption. Dissertation Abstracts international, 35, 3583A. (University Microfilms No. 74-26, 628).

Zhao, D. L., Pugh, F. A., Sheldon, J. D., & Byers, S. M. (2002). Does technology integration work when key barriers are removed? Educational Media International, 45, 195-213.

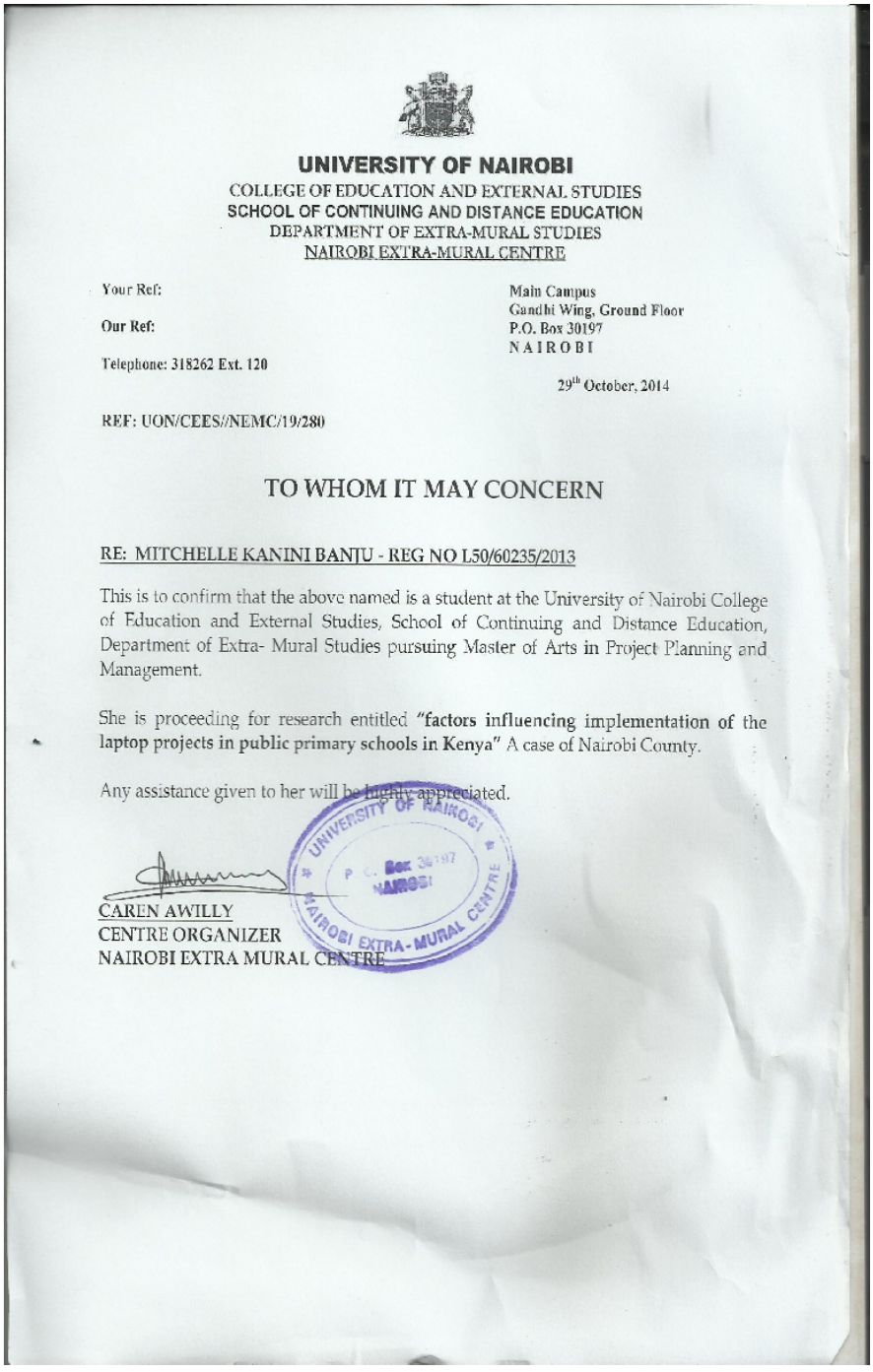
Zhao, Y, & Frank, K. A. (2003). Factors Affecting Technology Uses in Schools: An Ecological Perspective. American Educational Research Journal, 40

Zhao, Y., & Cavusgil, K. A. (2002). Teacher Adoption of Technology: A Perceptual Control Theory Perspective. Journal of Technology and Teacher Education, 9(1), 5-30.

Zikmund, W.G. (2003). Business Research Methods. 7th Edition, Oklahoma State University.

APPENDICES

Appendix I: Letter of Introduction



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DEPARTMENT OF EXTRA-MURAL STUDIES
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Our Ref:
Telephone: 318262 Ext. 120

Main Campus
Gandhi Wing, Ground Floor
P.O. Box 30197
NAIROBI

29th October, 2014

REF: UON/CEES//NEMC/19/280

TO WHOM IT MAY CONCERN

RE: MITCHELLE KANINI BANJU - REG NO L50/60235/2013

This is to confirm that the above named is a student at the University of Nairobi College of Education and External Studies, School of Continuing and Distance Education, Department of Extra- Mural Studies pursuing Master of Arts in Project Planning and Management.

She is proceeding for research entitled **"factors influencing implementation of the laptop projects in public primary schools in Kenya"** A case of Nairobi County.

Any assistance given to her will be highly appreciated.

UNIVERSITY OF NAIROBI P.O. Box 30197 NAIROBI NAIROBI EXTRA-MURAL CENTRE

CAREN AWILLY
CENTRE ORGANIZER
NAIROBI EXTRA MURAL CENTRE

APPENDICES

Appendix II: Letter of Introduction

University of Nairobi

P .O Box 30197-00100,

Nairobi.

Dear respondent,

Re: Research.

I' am a student at the above named university undertaking a Master of Arts Degree in Project planning and Management. As a requirement for this course, the university expects me to submit a researched project as a partial fulfillment for the award of the degree.

To fulfill this requirement, I have decided to carry out a study on Factors Influencing Implementation of the Laptop Project in Public Primary Schools in Kenya: A case of Nairobi county.

I kindly request you to fill in the questionnaire attached. The information provided will be used with confidentiality and will only be used for the intended purpose of this study.

As you participate in this study, do not indicate your name. I highly appreciate your participation towards the success of this study. Thanking you well in advance for your kind participation.

Yours Faithfully,

Mitchelle Banju.

L50/60235/2013

Appendix II: Questionnaire

Questionnaire for Teachers

Section A: Background information

Please insert/tick (√) details or circle the appropriate category for you.

1. Sex:

Male	
Female	

2. Age:

18- 29 yrs	
30-39	
40-49	
50-59	
60+	

3. Your highest qualification:

P1	
Diploma	
Degree	
Other	

4. Number of years you have served in your current position.

Less than 2 yrs	
2-4 yrs	
4-6 yrs	
Over 6 yrs	

Section B: Procurement Procedures and the School laptop project

5. Please react to the statements about procurement procedures and the school laptop project by indicating whether you strongly agree, Agree, Disagree or strongly disagree. Please tick (√) against each statement your best opinion.

Factors	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
A Specific procurement policy is available for use in the school laptop project					
Previous procurement attempts for the laptop project have been very successful					
There are no reported cases regarding procurement bottlenecks for laptop project					
Previous court cases have delayed supply and delivery of procured goods and services for the laptop project					
Current procurement policy does not engage all the stakeholders					
Procurement delays are caused by vested interests rather than policy					

Section C: Financial Constraints and the School laptop project

6. Please react to the statements by indicating whether you strongly agree, Agree, Disagree or strongly disagree with the following factors?

Factors	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
The poverty levels in this area slacken the laptop project					
The school fund is not adequate to cater for the laptop project					
The laptops recommended for the project are too expensive					
The software associated with the project is too expensive to maintain					
The cost associated with repairing and servicing the laptops is high					

Section D: Teachers Capacity and the School laptop project

7. Teachers are properly trained in the basic IT skills? Yes [ ] No [ ]

8. Majority of the teachers are equipped with the IT curriculum recommended by the laptop project pioneers? Yes [ ] No [ ]

9. How many teachers in your school have the basic IT skills and knowledge? _____

10. Do you think teacher's capacity determines the success of the laptop project in the school? Yes [ ] No [ ]

11. Have you personally been trained under supervision of instruction for the laptop project? Yes [ ] No [ ]

12. If yes, what were the key areas of competency?

Comment	**(Tick)**
Basic IT skills	
Basic computer knowledge	
Ministry IT curriculum	
Advanced computer training	
Other:	

Section E: Electricity and the School laptop project

13. Please react to the statements by indicating whether you strongly agree, Agree, Disagree or strongly disagree with the following factors?

Factors	**Strongly Agree**	**Agree**	**Neutral**	**Disagree**	**Strongly Disagree**
Lack of power supply in this area slackens the laptop project					
The school runs on a generator which is not adequate for the laptop project					
Frequent power interruptions in the area affect the laptop project					
The area is inaccessible for power lines and cannot support the laptop project					
Frequent power surge and power outs impair the laptops					

Section F: Implementation of the School Laptop Project

14. Do you think you have enough facilities for the school laptop project?

    Yes [ ] No [ ]

15. If No, do you think the project is smoothly on course?

    Yes [ ] No [ ]

16. Is the IT curriculum easily delivered or taught to all the pupils?

    Yes [ ] No [ ]

17. If Yes, do you consider the laptop project a success?

    Yes [ ] No [ ]

18. In your view, do you feel the implementation of the laptop project was rushed?

    Yes [ ] No [ ]

19. On a scale of 1-5, kindly rate the implementation of the school laptop project.

Factor	**Tick**
1.Perfect	
2.Good	
3.Average	
4. Poor	
5.Very poor	

Thank you for completing this questionnaire. Your participation is very much appreciated.

Appendix III: Interview guide

To: Officials from the Ministry of education and officials from Kenya Institute of Curriculum Development.

Please respond to the following questions.

1. What is your opinion about the implementation of the school laptop project?
2. What factors do you think affect the implementation of the school laptop project?
3. What do you think is the main cause of slow implementation of the laptop project?
4. Has there been smooth procurement processes for the laptop project? Why?
5. Do you think all the schools are ready for the implementation of the project? Why?
6. Do you think the teachers are well trained on the new ICT curriculum? Why?
7. What is the role of political goodwill in the laptop project for Kenyan pupils?
8. Do you think the laptop project is viable? Why?
9. Can the government adequately fund the laptop project to its completion? Why? Are there other funding options?
10. On a random check, do you think the primary schools are well equipped and ready for the laptop project implementation?
11. What is your feeling about the state of security for the laptops when given to pupils?
12. How will schools without power supply implement the laptop project?
13. Any additional or closing remark on the laptop project implementation?