MOBILE TELEPHONY AND THE MANAGEMENT OF EDUCATION INSTITUTIONS IN KENYA: A CASE STUDY OF BRIDGE INTERNATIONAL ACADEMIES.

By

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DECLARATION

Declaration by Student:

This study is my original work and has not been presented for an award of a degree or diploma in any other university or institution.

Sign:……Date:…. …….

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Declaration by Supervisor:

This research proposal has been presented for examination with my approval as the university supervisor.

Sign:……..Date:…. …….

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DEDICATION

I dedicate this project to my lovely husband Stephen Oloo Obock, whose love, inspiration and support could never be valued. I will forever cherish your presence in my life. To my mum Mrs. Betty Malanga Mukhwana, thank you for always encouraging me to go for the best.Profound gratitude to my lovely and cute daughter Alyssa Yvette, who kept me company on most evenings as I worked on my project. I love you all and will forever hold you cherished close to heart. Thank you so much and God bless you dearly.

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I bless my Lord Jesus Christ for His grace has always been sufficient for me.

This far the Lord He has been Ebenezer!

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ABBREVIATIONS

SMS – Short Message Service

SPSS- Statistical Package for Social Sciences

PDA-Personal Digital Assistant

PCS-Personal Communication System

IM-Information Management

ICT-Information Communication Technology

KESP-Kenya Education Sector Program

SA-SAMS-South African Schools Administration and Management System

CUME- Computer Unit of the Ministry of Education

MoE-Ministry of Education

KNEC-Kenya National Examination Council

TSC-Teachers Service Commission

CCK-Communications Commission of Kenya

TAM-Technology Acceptance Model

TRA-Theory of Reasoned Action

PEOU-Perceived Ease of Use

PU-Perceived Usefulness

ABSTRACT

This study aims at assessing how mobile telephony has revolutionized the management of education systems in Kenya with special reference to Bridge International Academies. Bridge International Academies in the world's largest education company offering quality primary education within the impoverished parts of Kenya. The following objectives guided the study: to determine the accuracy and speed of a smart phone in conveying information by the academy manager, to identify the advantages of using mobile phone communication in managing Bridge International Academies and to identify the challenges and advantages involved while using mobile phone communication to manage these academies. A case study was conducted through the use of questionnaires to gather both quantitative and qualitative data. The selected sample included academy managers, teachers and parents. The questionnaires were tested first for validity and reliability purposes. Statistical Package for Social Sciences was used to analyze the data collected.

The research findings have indicated that even though mobile phone communication is faced by various challenges, it is an effective and efficient way of managing an education institution. This is because it is reliable and accurate to a great extent.

CHAPTER 1: INTRODUCTION

1.1 Introduction and Background of the study

Communication has been evolving ever since human existence on the surface of the earth. Several scholars have defined communication in different ways including Gorge A. Miller who states that; communication is the process of transferring information from one entity to another ((Miller A., 1963). However, it is not just a process, rather, it is an art of listening or reading the information, comprehending it, processing it and then transferring it from the source to the recipient. Various communication technologies emerged with the various communication evolution stages and these technologies had varied effects on the process of communication.

According to George R. Terry (2008), management is a distinct process consisting of planning, organizing, actuating and controlling; utilizing in each both science and art, and followed in order to accomplish pre-determined objectives. Managers thus cannot effect all these functions without effective communication. Effective communication comes along with effective tools of communication like smart phones.

1.1.1 Oral Communication Era

The unique characteristics of this era are that it was entirely based on interpersonal communication. It relied heavily on face to face interactions and was very flexible; information could be easily changed based on the situation. The basic tool of communication during this era was the mouth and this subjected the communication process to various errors: message distortion,lengthy and distant communications not being effectively conveyed verbally; the

receiver could receive the message in their own perception and thus misunderstand the intent of the message.

With regards to management of education institutions, managers in most institutions usually use oral communication to communicate interpersonally with upper management. Since managers serve as gatekeepers of information between upper management and subordinates, an effective manager understands their role in keeping the lines of communication open. When organizational information fails to reach its intended recipient, the entire organization can suffer. However, the challenge here is that this process is time consuming.

1.1.2 The symbolic Communication Era

This era was characterized by the creation of shared symbolic language that allowed for human communication (Bickerton, 2000).The symbolic language, however, consisted of a disorganized set of signs that could have different meanings to each human being using them at any particular point in time. There was the use of smoke signals, songs, shouts and cries. The challenge with the smoke signal was that any variations in weather patterns could easily lead to miscommunication or total failure in the communication process.

1.1.3 The Writing Communication Era

Further developments in communication led to early forms of writing which were noted among the Sumerians and the Egyptians around 3500-3200 BC (Schmandt Besserat, 1996).Writing is the expression of language by letters or other marks on a surface. Writing thus took communication to a higher level because then permanence in the messages conveyed was made

possible. Information was stored for future references by generations to come (Irving Fang, 1997).

During the 13th century, people also began using letters as a means of communication with their relatives who lived in far places. The major challenge of sending letters was that one had to wait until someone would be travelling to such places for them to deliver the letter and this would ideally cause major delays in message delivery. With regards to communication, the development of writing was characterized by the fact that it changed the nature of creating and sharing information dramatically and irrevocably. Therefore with the advent of writing, errors in message transmission and loss of information could easily be curbed.

1.1.4 The Printing Era

Elizabeth Eisenstein (1980) points out that the print culture represented a unique departure from the chirographic or scribal culture. The print materials were thus the main tools of communication during this era. When the printing press was invented in 1455 BC, humans were able to communicate for the first time with the masses, without regards for proximity, and translation into other languages broke that barrier as well. Just as writing had freed sharing of information from the limits of individual human memory, print freed information from the constraints of hand copying texts. This era is recognized by its major characteristic of mass production of information which led to a radical increase in the extent of knowledge sharing especially in the Western world.

Marshall McLuhan, (1998) asserts that, “technology of print communications can be seen as promoting both individualism and uniformity. It was a way of keeping the society connected with the past as well as making people knowledgeable of the future

1.1.5 The Electronic era

1.1.5.1 The Telegraph

The Industrial age was characterized by the desire to perform tasks in a more faster and efficient manner. This desire was met by various developments in the invention of the telegraph by a man called William Watson in 1747.This development allowed for instant communication across long distances; something that had never been done before. Telegraphic communications involved the sending of electrostatically generated signals through a wire. During this development, there was increased efficiency and speed in communication. The important characteristics of the early telegraph include:

- It was the first medium to separate message sending from transportation.
- It freed communication from the constrains of physical geography.
- It was cost effective and less tedious since the sender had to use only a few words.

1.1.5.2 The Telephone and mobile phones

In 1876, Alexander Bell invented the telephone which greatly revolutionized human communication. The telephone led to instantaneous communication; an improvement from letter writing and delivery. Various developments have taken place in the face of the telephone leading to the emergence of better and more affordable cell phones or mobile phones. The end result is a dramatic improvement in access and transmission of information both locally and internationally among individuals of a society. It also causes instantaneous communication between friends and family as they call each other to discuss recent developments around them.

The mobile phone has become one of the most successful inventions in the 20th century. In the late 90s, mobile phones became one of the major communication devices. Mobile phones were meant to be devices which enable users to have the ease on telecommunication as freely wherever they want; but in the late 90s SMS (Short Message Service), a new technology was brought out. SMS is a transmission of short text message from one mobile phone to another mobile phone. This became a revolution making mobile phones to develop into better and efficient communication devices. Mobile phones have also become an entertainment device; featuring functions such as camera, FM and MP3 players. They allow users to access internet services, personal digital assistant (PDA) functions and also have video conference using the latest 3G network. It had been noted that someday, mobile phones might be able to replace computers and indeed they already have (Mutwiri, 2012).

It is often argued that mobile phones have fundamentally changed the way organizations operate; as they enable, and in many cases drive dramatic changes in the structure and operations of most organizations (Y.E Spanos et al, 2002). The mobile phone as a communication tool allows for efficiency in work environments; for example, a team leader can send a meeting agenda to the whole office via sms, a process that once would have required typing a memo, making copies, and distributing them to each individual. Mobile phones enable us to communicate faster and send documents without having to use postal services. However, many believe that communication technology has created an environment in which speed has taken precedence over accuracy. With regards to mass communication, mobile phones have proved very effective in transmitting single information from one person to masses; thus one message in distributed to a homogeneous audience.

1.1.5.3 Effects of Telephones and mobile phones

It has changed the pace of business and made the world smaller and more accessible to all. The telephone also changed the way social relationships and interactions take place. Communication over the telephone has broadened the range of people one could interact with within a short period of time. Long distance relationships have become possible. The telephone helps keep family and community bonds close (Bauer, Martin, 1995)

Telephone eliminates travel time and provides the instant gratification one gets from a direct response to one's communication. It is much easier to phone an expert to get information on a certain topic than to read a textbook. Communication through the telephone grants more privacy as it provides anonymity without the need for written records or documentation.

Communication must be understood as a process, which has evolved over time from various traditional mediations. Today, communication and the way we communicate has radically changed. Although, traditional means of communication will never be eradicated, it is important to understand that the mobile technology has affected the way people interact within various set ups. Mobile technology assists in the transmission of information because it has the ability to surpass many boundaries. According to Manuel Castell's idea of "space flows" is the material organization of time-sharing social practices that work through flows". There is no physical space, and time and space should not be disconnected.

1.1.5.4 Smart Phones

The new media has led to the advancement of mobile phones into more efficient and effective phones like the smart phone. A smart phone is a computerized communications device, small enough to be held in the palm of the hand and which provides a wide variety of features to the user. It is the logical evolution of the PCS or Personal Communications System. It is a device which allows the user to not only make and receive phone calls, text messages, and voice messages, but also operate a wide variety of other communication operations; thus enhancing productivity and convenience through its applications. A smart phone is able to do a wide variety of functions since it is at its core, a simplified handheld computer device. It can allow the school mangers to increase their overall productivity, making life more convenient by saving time and physical energy (http://www.modernizetelecom.com).

The mobile operating systems found on smart phones allow users to run software, commonly known ‘apps’’, which deliver highly usable and tightly focused functionality enabling myriad applications. In some cases apps come pre-installed on smart phones, though many others are freely and cheaply available: over 425,000 different apps are available for the iPhone alone (Apple Report, 2011).

Smart phones first started hitting the market around 15 years ago. At that time they were very simple devices which only allowed the user to run a small number of convenience applications, like send text messages, access and send e-mails, and have access to personal information manager data. The first smart phones were produced by the Blackberry Company and were designed for use by researchers, educators and business professionals. They were very expensive, slightly complex to use and had limited functionality (Zhao and Frank, 2003).

1.1.5.5 Advantages of smart phones over other mobile phones in management of education institutions

Information management: A smart phone serves as an information management tool. Information management (IM) is the collection and management of information from one or more sources and the distribution of that information to one or more audiences. This involves those who have a stake in, or have a right to that information. Smart phones also help with the application of management techniques to collect information, communicate it within and outside the organization, and process it to enable managers to make quicker and better decisions. Thus, with the smart phone, the academy managers have their schools in a box. Smart phones are a powerful tool with regards to receiving and transmitting very large amounts of data such as large e-mail attachments or data files from websites. Previous mobiles could only afford to carry small e-mails with no attachments.

Functionality: Smart phones have greater functionality applications as compared to other mobile phones. This is dependent on smart phone features like: in-built digital cameras which are helpful in capturing and sharing photos and videos instantly. Many regular cell phones are equipped with cameras, but not of the quality found on smart phones. For instance, the iPhone 4S has an 8-megapixel camera, capable of taking both still photos and video in 1080p quality. It also offers the ability to edit from the phone itself and enables users to share pictures and videos instantly.

Smart phones also offer global positioning systems (GPS) with satellite navigation (B.Woodock et al, 2012). They have a multi-purpose personal digital assistant (PDA). Using the powerful in-built processor and memory, smart phones come equipped with an address book, calendar,

calculator, note pad, voice recorder, and many other features to keep professional operations running smoothly. Many smart phones also come with simple word-processing capabilities, spreadsheet and database programs, as well as mobile presentation software. Smart phones offer users a level of on-the-go convenience not matched by standard phones, increasing user efficiency. The school mangers can thus access any documents from wherever they are without having to go and search in hard copy files.

1.1.5.6 The Smart Phone and management Bridge International Academies

Management refers to the organization and coordination of the activities of a business in order to achieve defined objectives. It is often included as a factor of production along with machines, materials, and money (Peter Drucker, 1909-2005). It is also the organization of and control over the planning, structure and organization, controlling, processing, evaluating and reporting of information activities in order to meet client objectives and to enable corporate functions in the delivery of information.Managementalso means the organization of and control over the structure, processing and delivery of information.

Bridge International Academies is the world's largest chain of primary schools which was started in 2007 and is offering high quality primary education at an average of $ 5 per month to children living in the most impoverished parts of Kenya. This company has a total of 28 academies within Nairobi County. Its mode of management is by use of a smart phone. The smart phone as an ICT tool is used to manage the human resources, financial resources, lesson content as well as pupil profiles in all of the academies. Thus, with the smart phone, the academy managers are able to run all the academy operations from the comfort of their hands.

With regards to communication and management, the academy managers at Bridge International Academies are the money managers, community leaders, instructional leaders, general managers and the academy marketers. These smart phones have been enabled with an application called Bridge Manager Application which supports effective running of all the school operations on the smart phones. For these to succeed, the academy managers must communicate with the teachers, parents, non-teaching staff and the head office. Alerts and updates from the head office are often received on the smart phones and the academy managers are able to make prompt replies hence immediacy in actions regarding various matters.

The teachers' menu on this application also allows for access to teacher attendance in terms of arrival and departure times. Teachers' monthly salaries are calculated based on what has been generated by the smart phone. This information is then communicated via the same smart phone to the head office before teachers receive their pay via m-pesa. This manager application is thus able to run financial and human resource functions very effectively. Contrary to the most traditional systems where the managers rely on hand written documents which are easily manipulated hence accuracy is not guaranteed. In most schools communication is traditionally done through sending staff information via post office or a physical presence in the head offices, which tends to be more time consuming.

As an ICT tool, the smart phone is able to do an electronic compliance check of all teachers within span of up to 5 minutes. Just by a touch on the correct menu, this information is automatically communicated to the head office without the manager having to physically deliver the paper documents. Information regarding the teacher performances is hence generated using the data that had been loaded into the smart phone during the electronic check.

Pupil attendance is taken by the teachers on the nooks every morning and afternoon session and this directly reflects on the academy manager's smart phone hence he can access the entire academy population in terms of attendance without having to physically walk around the school and take the attendance. This information can easily be accessed at the head office since the manager communicates the daily pupil attendances instantly after it has been captured from the individual class teachers' nooks. This is effected by just a touch on the correct menu of the application.

The academy managers are also responsible for admitting pupils into the academies on a monthly or termly basis. With the smart phone, the academy managers are able to run the admission processes as fast as possible and at the same time communicate the admission information to the head office immediately by use of the manager application. With this application, any admission data that is input into the pupils' profiles is immediately communicated and updated in the main data base at the head office. This is contrary to the traditional admission processes in most schools where a lot of paper work is involved and the process is usually time consuming. In addition, the traditional processes in most schools will require the managers to document the pupils' profiles on paper and submit these data to regional offices or officers walk around the schools and collect data from the class registers. The process of communicating this to the relevant authorities is often delayed due to time constrains.

The management role also revolves around ensuring that teachers are teaching the correct lessons at the right times according to the scheduled time tables. The smart phones communication role in this case is to relay the correct lessons onto the teachers' nooks and so teachers are able to access the correct content. The smart phone has the ability to store large volumes of lesson

content for all the classes throughout the term and this data is electronically communicated onto the individual teacher nooks.

The smart phone is also very effective in generating individual pupil payment profiles. Parents coming to the school are able to view all the payments that they have ever done to the academy at any point. The smart phone through the Bridge manager application is able to receive and retrieve all pupil fee payment updates and alerts whether a parent made the payment through the bank or via m-pesa. These smart phones also come with back up batteries hence prolonged power shortages do not easily affect their use. The manager is within rich at all times and therefore all communication processes are hardly affected.

1.1.5.7 Challenges facing the use of the smart phone at Bridge International Academies

Access to information: The fee payment alerts are only accessible to the managers and not to the individual parents who made the payment. Therefore, the managers still have to make a phone call to the parents and assure them that their payment has been received. Sometimes these parents are forced to physically present themselves to the academy for a verbal communication about the payments.

Internet: The smart phones being used at Bridge International Academies heavily rely on the WIFI internet connection hence lack of connectivity derails all functions within the academy. Poor internet connectivity leads to poor or no communication of teaching/learning content on to the nooks. In addition, pupil and teacher attendance and confirmation are also affected hence have to be manually taken. In this case, most academy operations as well as communication updates to and from the head office are always delayed.

Maintenance: The ideos smart phone model being used at the Bridge International Academies is very delicate hence needs a lot of care when using it. Any damage to the screen renders it nonfunctional. A slight fall on a hard surface also affects its lifespan and this can also lead to breakdown in effective communication.

Theft: Bridge International Academies are situated within the Nairobi slum areas hence this poses a big challenge to the managers when coming in and when leaving the academies. Since the smart phone "is a school in a box", the managers have to be very careful since all the data related to his school is on this tool. There is bound to be a big communication breakdown in case this tool is lost.

Acceptance/Adaptability: As a new communication tool being used in management, the community has not fully accepted the fact that fee payments and other school processes can be run without any paper documentation. Parents are traditionally used to receiving receipts after any money transactions with schools and are therefore battling with adjusting to this new mode of operation.

This study therefore aims at finding out the impact of mobile phone communication in the management of education institutions in Kenya, with specific reference to Bridge International Academies in Nairobi County; where the academy managers rely heavily on the smart phone to run all the academic, administrative, human and financial affairs of the schools. Despite the fact that various ICTs are being adopted at a relatively slow pace in the Kenyan education system, Bridge International Academies has proved otherwise by adopting the use of the smart phone in running its academies' operations especially with regards to communication and management.

1.2 Problem Statement

Accurate and speedy communication is the back bone for any successful educational institution. It has also been noted by Barnett, (1999) that information technologies including mobile phones have been very successful in management of business firms. Thus, any delays or inaccuracies in the communication process are bound to adversely affect the operations of an education institution. The management of education institutions in Kenya relies heavily on interpersonal means of communication. This involves face to face interactions between the heads of schools and the ministry of education officials at all levels. Interpersonal communication is irreversible and all parties involved are always interdependent on each other. It is apparent that these approaches have their short comings and are bound to make communication and management of education institutions more difficult and time consuming.

From the background of this study it is noted that with the emergence of the digital era, mediated communication is now taking shape within the education system around the world. The use of smart phone is more ideal compared to reliance on interpersonal communication because smart phones are able to serve as information management tools and have greater functionality applications which allow for complex operations at ago. This has therefore led to a shift in the way educational institutions like Bridge International Academies are managed using the smart phone, thus, mediated communication. The academy managers rely heavily on the use of a mobile phone to communicate and manage all the affairs of their academies. However, there has been no single research done to assess the use and effects of mobile phones in the management of education institutions in Kenya. This study therefore sets out to investigate how the mobile phone has revolutionized the management of education institutions in Kenya using a case study of Bridge International Academies.

1.3 Objectives of the Study

The main objective of this study is to determine how the mobile phone has revolutionized the management of education institutions. The following specific objectives will guide the study:

i. To determine the accuracy and speed of a smart phone in conveying information by the school managers.
ii. To identify the advantages of using mobile phone communication in managing the Bridge International academies
iii. To identify the challenges encountered while using mobile phone communication Academies to run the academy operations

1.4 Research Questions

The following research questions will be used:

i. How accurate and fast is the smart phone in conveying information by the school managers?
ii. What are the advantages of using mobile phone communication in managing Bridge International academies?
iii. What challenges does the management face while using the smart phone to run the academy operations?

1.5 Significance and justification of the study

The evolution of modern technology around the world has enhanced communication in all spheres of human existence including education. Education institutions across the world are

taking shape by embracing ICT like mobile phone technology in their communication and management processes with the aim of achieving efficiency and effectiveness. However, previous research findings have indicated that there has been a slow rate at which ICTs like mobile phones are being integrated into the Kenyan educational Institutions and especially so in the area of management. This study therefore aims at assessing the impact of mobile phone communication in managing education institutions in Kenya with specific reference to Bridge International Academies.

This study is significant in the sense that it will put into perspective the advantages of using mobile phones over the traditional methods with regards to communication and management. In terms of speed and accuracy, a smart phone is a reliable communication tool to be used by educational managers. This study is of particular importance to educational policy makers, private and public school owners who have put in little effort in ensuring that their school managers and administrators use mobile phones especially smart phones to run school operations. The challenges highlighted from the research will help Bridge International Academies restructure their mobile phone communication so that it serves the intended purpose more effectively.

Educational researchers will also find this study useful for further researches in the field of communication management. They will thus have a reference point with regards to how the mobile phone technology is revolutionizing the trends within education sector. The recommendations made in this research will help them to do further research so as to fully bring on board all aspects of mobile phone communication in the management of education institutions in Kenya. The recommendations of this research will have a positive impact on all educational stakeholders by causing them to invest more funds in ICTs like mobile phones as opposed to

reliance on interpersonal modes of communication to run the operations of their institutions in a digital era.

1.6 Assumptions of the study

The study is based on the following assumptions:

- The mobile phone is used in matters of human resources, pupil profiles, finances as well as instructional materials.
- The smart phone is a fast and accurate communication tool to be used by school managers.

1.7 Limitations and Delimitations of the study

This is a case study of an existing model Bridge International Academies within Nairobi County. The study will only focus on determining how the mobile phone (smart phone) is being used in this set up, its speed and accuracy, advantages of using this communication approach as well as challenges encountered while using it. The results of assessing this existing model are meant determine if there is any positive impact when it comes to the use of mobile phone communication in the management of education institutions. The study is for the fulfillment of my Master's Degree Program and therefore not applicable beyond this focus.

1.8 Chapter summary

In summary, the researcher has given an introduction and background of the study which revolves around the evolution of human communication through various eras up to when mobile phones evolved. The researcher has gone further to state and explains what the problem statement of the study is. This is followed by a reflection on what specific objectives will guide

the study as well as the research questions. This chapter also explicates on the significance and justification of the study followed by various assumptions of the study, limitations and delimitations of the study.

CHAPTER 2: LITERATURE REVIEW AND CONCEPTUAL FRAMEWORK

2.1 Introduction

This chapter reviews the available literature on mobile phones and their usage within the education sector. The researcher has been able to identify various historical as well as contemporary works related to the use of mobile phones within the education sector. The researcher also intends to put into perspective the fact that many other ICTs are being used in running educational institutions' operations, but the mobile phone is hardly mentioned in the area of managing educational institutions. This therefore creates the gap that forms the basis for this research. This review of literature will also explore theories that have been advanced by scholars in relation to ICT use. This chapter will also look into the challenges that Kenya is facing with regards to the implementation and usage of mobile phones in the educational institutions.

2.2 The Kenyan ICT Scenario

ICT refers to a set of technological tools and resources used to create and communicate, store and manage information (Blurton, 1999). From this definition, the mobile phone qualifies to be an ICT tool because; it can be used to create messages in the form of SMS, communicate the same message to an individual or groups of people, store large volumes of data e.g. pictures, videos, music downloads as well as messages if different files, and also manage the same information in the sense that the stored information in a mobile phone can be distributed electronically to other ICT tools and audiences.

By its very nature, the ICT phenomenon is relatively new in the developing world. Available data suggests that the majority of developing countries such as Kenya in sub-Saharan Africa are lagging behind in the information revolution. ICT has contributed greatly to educational

management of schools globally. However, in Kenya and other developing countries, school administrators hardly use ICTs to manage the quality of output, raise teacher productivity, or reduce costs through analyzing spending (Zhao and Frank, 2003).

According to the Sessional Paper No. 1 of 2005, the Ministry of Education developed a policy to integrate ICT into education in order to prepare learners and education managers for the 21st Century's education, knowledge and economy. In relation to the Kenyan Constitution 2010, it was necessary to develop a strong human resource capacity so as to achieve the educational goals of vision 2030. Among the goals of incorporating ICT in education is to improve how the educational institutions are managed.

The Kenya Education Sector Program (KESP) 2005-2010, highlighted the following recommendations:

- All Kenyan Education Institutions to adopt ICT systems and tools for effective management and governance that will help in the transition to digital instead of paper business processing.
- The Ministry of education to strengthen the institutional framework that will allow efficient integration of ICT across the entire education sector (e-management, teaching and learning).

According to the Kenya country report (Glen Farrell, 2007) on ICT in Education, Kenya promulgated a National ICT Policy in January 2006. This policy includes a section on Information Technology that sets out the objectives and strategies pertaining to ICT and education. The relevant objective in this section states that the Kenyan government will

encourage "…the use of ICT in educational institutions in the country so as to improve the quality of teaching, learning and the overall institutional management."

The use of ICTs like mobile phones in educational management is greatly under-emphasized. As such, a more holistic approach requires that schools be receptive and open to the changes mobile phones may make, and to the ongoing evaluation of these changes for the schools' purposes. Since there is evidence from countries such as Botswana, Namibia and South Africa that investments in ICTs like mobile phones use in education management in schools has been successful, other developing countries need to follow suit (Becta, 2004).

In Kenya, there are various stakeholders who are supporting the integration of ICT in the education sector. They include: NEPAD (New Partnerships for Development), KIE (Kenya Institute of Education), KENET (Kenya Education Network) and IICD (International Institute for Communication Development). Educational managers need to have basic information on quality of teaching, student and teacher flows, probably also of school supplies, and how much the school as a system is spending on various inputs, in order to make the most basic resource allocation decisions (Journal of Sociological Research, 2012).

Mobile phones help school administrators to streamline communication operations, monitor performance and improve the use of physical and human resources. More than other technologies, mobile phone technologies like the smart phone have the potential to support the management of complex, standards-related instructional processes in relatively simple ways. They also can promote communication among schools, parents, central decision makers and businesses thus fostering accountability, public support, and connectivity within the school environment.

Studies in Asia and America indicate that mobile phones have played an important role in improving management of educational systems through for example availing data widespread to parents and the public at large, through central administration websites and in some cases through direct access to central databases by school personnel (Becta, 2003; Yang, 2003). However, this is not the case in the Kenyan education system.

Kessy, Kaemba, and Gachoka, (2006) and Ford (2007) highlighted some of the reasons as to why many third world nations like Kenya are lagging behind in the use of ICT in education. They include: high costs of acquiring ICT hardware and software equipment, high bills from the telecommunication networks and the maintenance and repair of facilities is often prohibitive for developing nations.

Limited skilled human resources in computer knowledge, which is precipitated by the reluctance or inability for schools to introduce other forms of ICT often results in limited use of resources, creating a vicious cycle (Kessy et al., 2006). A study by Wabuyele (2003) indicated that while mobile phone technology had penetrated many sectors including banking, transportation, communications, and medical services; the Kenyan educational sector seemed to be lagging behind.

ICTs like mobile phones can be very effective in achieving the following:

Accuracy: Educational institutions are always required to hold accurate information. The data present in their systems should reflect the daily happenings in matters pertaining to pupil profiles, fee payments, human resources and assessments. The information given at any time should help the public in making decisions in real time without physically moving to the

headquarter offices which may be miles away. Information should thus be free from any errors. This can be effectively achieved with the use of mobile phones especially smart phones.

Timeliness:

Castells (2001) also notes that the use of ICT improves operational efficacy, reduces operating costs and provides great opportunities for doing better. Most firms have adopted the use of mobile phones in customer service rather than routine paperwork. Such use increases the efficiency of activities, reduces the transaction time and/or reduces costs. ICTs like mobile phones are also being utilized in internal management operations, leading to increased internal efficiency and reduced costs (Earl, 2000).

Technologically facilitated means of service delivery have the potential to benefit customers, employees and management alike (Yosri, 1992). Mobile phones enable customers to receive better services in terms of: greater convenience and control, potentially more reliable information delivery, access to data and support services that may not have otherwise been available, and the ability to conduct transactions in such a way that does not necessitate the customer visiting the organization in person. Correspondingly, mobile phone technology can be used by management to permit faster response to customer enquiries and problems, to improve internal efficiency and productivity, to reduce labor costs, and to gain a number of distinctive and differentiating competitive advantages (Walker and Craig-Lees, 2000).

2.3 Preference of Mobile phones over PCs

Mobile usage tends to be growing faster than the use of PCs in all sectors of the economy. In 1979, the first commercial cell telephone system began to operate and attracted significant number of subscribers for its service by the mid-1980s (Lacohee, Wakeford, & Pearson, 2003).

According to Dan Frommer, a capital analyst, mobile phone sales were expected to outstrip PC sales in 2011, and the smart phone users worldwide to triple from 165 million to over 500 million from 2009 to 2012. For the year 2013, China alone is expected to absorb 240 million units, 29% of the 837 million global total; extending its lead as the world's largest smart phone market over the United States. Africa has also been noted as the fastest growing mobile market in the world and will be home to 738 million handsets by the end of this year. The rise of smart phones has given millions of Africans Internet access for the first time, attracting new investments and innovations, (Canalysforum.com).

The increasing capabilities of mobile phones or smart phones are positioning them as the technology of choice, replacing PCs for many users. On 22nd September, 2012, the East African Newspaper had an article on how Kenya is driving peoples' thinking on how to collect data via mobile phones. This was an article written after a reporter's interview with Eileen Campbell, global CEO of Millward Brown, the WPP-owned global marketing research company.

In East Africa, high purchasing prices had been the main barrier for the widespread adoption of mobile devices in various sectors. However, in the recent past, the region has benefited from aggressive competition as mobile phone manufacturers push to expand their market share by unveiling different models of mobile phones hence giving the potential buyers a variety of options to choose from. It is also expected that data usage will increase as smart phones become gatherers of data. At some point, people will move away from voice and concentrate more on data.

In 2010, Safaricom entered into a partnership with Huawei Company to launch the ideos mobile phone powered by Google Android, which has performed well in the market for quite some time.

This is the model that the Bridge International Academies is currently using in all its academy operations. There are various types of smart phones among them Samsung and Nokia.

2.4 Smart phone use in education

Smart phones are being used in various ways in the education field. The inexpensive but useful applications within smart phones are being utilized for different purposes based on the needs of the users from time to time. In addition, the web browser embedded in smart phones links to a great wealth of content which is resourceful to managers, students and tutors. These phones also have two-dimensional barcode labels on objects which can be scanned hence this can be shared by many parties at ago.

According to Ben Woodock, Andrew Middleton and Anne Nortcliffe(2012), Smart phones are portable devices that empower users to respond to situations, ideas and needs as they emerge in a timely and efficient manner. The capacity of a smart phone to access, manipulate, produce, store or share content almost as soon as it is created, wherever it is created; provides the rationale for its exploration in educational institutions. The nature of education in terms of communication and access to education content would positively change if all stakeholders were to embrace the technology.

Herrington (2009) discusses how smart phones can be used to collect video, image and audio data for creating digital narratives or stories for use as curriculum resources.

Walsh (2010) and Ramsden and Jordan (2009) have reported on the use of smart phones in supporting innovation with QR Codes: two dimensional coded patterns that, when scanned by a camera application, are capable of conveying and connecting to situated information. Ramsden and Jordan found that in 2009 the majority of students were able to access information on their

personal devices, but were largely unaware of the technology and how it could be used, with only one in 50 ever having used a QR Code.

2.5 The Impact of Mobile phones on business firms

Information Communication technology has the potential to increase productivity and growth in Africa, as well as improve quality of educational management. By improving communication networks between companies and their suppliers, mobile phones can enable firms to manage their supply chains more effectively, streamline their production processes and also engage in new activities (Hardy, 1980; Roller and Waverman, 2001). Samuel, Shah and Hadingham (2005), indicated that the use of mobile phones can lead to increased profits, significant time saving, increased profits and improved communications within small firms.

Developments in the mobile phone industry have led to job creation for many people. With the high increase in the number of mobile phone operators as well the wide mobile phone coverage, labour demand within these sectors has also increased. According to the CCK report, (CCK, 2008), formal sector employment in the private transport and communications sectors in Kenya rose by 130% between 2003 and 2007; and this was due to growth in the mobile phones industry. Currently, there are so many businesses and entrepreneurship opportunities springing up in the informal sector due to mobile phones and therefore the percentages are rating even higher day by day.

2.6 ICT and management of education institutions

South Africa has a well-established management information system for the various education sectors that exist in the country. The South African Schools Administration and Management System (SA-SAMS) is a ‘robust computer application designed to meet the management,

administrative and governance needs of public schools in South Africa. Information input into SA-SAMS by schools enable the provincial and national departments to access quick and up-to-date data for snap and annual surveys that enable appropriate educational planning. Africa (Dr. Lishan A. and Dr. F.F. Tusubira, 2011).

Senegal has achieved considerable progress in the deployment of EMIS. The Computer Unit of the Ministry of Education (CUME) is responsible both for the development of ICT in education and for the adoption of applications for managing educational resources (Dr. Lishan A. and Dr. F.F. Tusubira, 2011).

In Kenya, the overall education policy leadership is bestowed on the government through the Ministry of Education, Science and Technology. Management of education is also devolved to the provinces headed by PDEs and DEOs in charge of primary, secondary and tertiary education in their areas of jurisdiction. Harmonization of the work between different agencies such as TSC, KNEC and MoE is weak, with especially the multiplicity of codes being used resulting in delays, inconsistencies and even paralysis of educational operations.

For private educational institutions like Bridge International Academies, the management of each academy is decentralized and therefore each academy manager is responsible for the operations of their own academy using the smart phone. One of the recommendations in the Strategic application of information and communication technologies in Africa paper (2012), is the support for standardized school-based management information systems and higher education management information systems that are developed using open standards capable of interfacing with social networks as well as mobile and low-cost computing. It is from this recommendation that this study now seeks to address some of the revolutions emerging in the education sector

because of the mobile phone; with special reference to management of education institutions using the mobile phone/smart phone.

2.7 Theoretical Framework

2.7.1 Technology Acceptance Model

The Technology Acceptance Model (TAM) is an information systems theory that models how users come to accept and use a technology. TAM (Davis, 1989) describes acceptance as 'users' decision on how and when they will use the technology'. The technology acceptance model specifies the causal relationships between system design features, perceived usefulness, perceived ease of use, attitude toward using the technology, and actual usage behavior. Martinez-Torres et al., (2008), noticed that initial use (acceptance) is the first critical step toward e-learning, while sustainable success depends on its continued use.

A development from the theory of reasoned action (TRA) formulated by Ajzen and Fishbein (1980) and developed by Fred Davis and Richard Bagozzi (1992), TAM provides an informative representation of the mechanisms by which design choices influence user acceptance, and should therefore be helpful in applied contexts of forecasting and evaluating user acceptance of information technology. This relationship can be tabulated in a table as shown below:

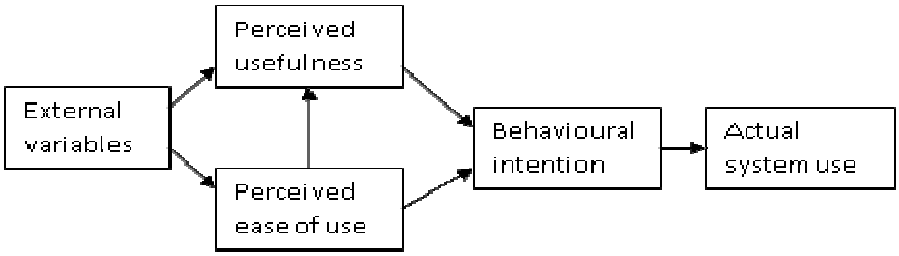


Figure 1: The Technology Acceptance Model
Source*: Davis, F.D. (1989). "Perceived usefulness, perceived ease of use, and user acceptance of information technology". MIS Quarterly, 13 (3), pp. 318-340.*

The model suggests that when users are presented with a new technology, a number of factors influence their decision about how and when they will use it, notably:

•Perceived usefulness (PU) – Is the degree to which a person believes that using a particular system or technology would enhance his or her job performance".

•Perceived ease-of-use (PEOU) – Is the degree to which a person believes that using a particular system or technology would be free from much effort (Davis, 1989).

TAM posits that perceived usefulness and perceived ease of use determine an individual's intention to use a system with intention to use serving as a mediator of actual system use. Perceived usefulness is also seen as being directly impacted by perceived ease of use.

According to the TAM, if a user perceives a specific technology as useful, she/he will believe in a positive use-performance relationship. Since effort is a finite resource, a user is likely to accept an application when she/he perceives it as easier to use than another. As a consequence, educational technology with a high level of PU and PEOU is more likely to induce positive perceptions. The relation between PU and PEOU is that PU mediates the effect of PEOU on

attitude and intended use. In other words, while PU has direct impacts on attitude and use, PEOU influences attitude and use indirectly through PU. TAM suggests users formulate a positive attitude toward the technology when they perceive the technology to be useful and easy to use (Davis, 1989).

User acceptance is defined as "the demonstrable willingness within a user group to employ information technology for the tasks it is designed to support" (Dillon & Morris, 2001). Although this definition focuses on planned and intended uses of technology, studies report that individual perceptions of information technologies are likely to be influenced by the objective characteristics of technology, as well as interaction with other users. For example, the extent to which one evaluates new technology as useful, she/he is likely to use it. At the same time, her/his perception of the system is influenced by the way people around her/him evaluate and use the system (Mutwiri, 2012).

2.7.2 How the principles of TAM can be applied in this study.

TAM has proven to be a theoretical model in helping to explain and predict user behavior of a technology (Park.S.Y. 2009). Davis (1989) proposed that TAM explains why a user accepts or rejects a new technology. TAM provides the basis upon which one can identify how external variables influence belief, attitude, and intention to use any new technology. TAM anchors on two principles of Perceived usefulness (PU) and Perceived ease-of-use (PEOU). PU and PEOU either directly or indirectly influence adoption and use of any new technology in any firm.

Using the TAM model's to assess how mobile phones/smart phones have revolutionized the management of educational institutions in Kenya; the study will seek to address the following:

- To what extent has the smart phone been useful to the Bridge International Academies managers in enhancing their tasks/ management skills?
- Is the smart phone an easy tool to use in managing the academy as compared to relying on paper work?

2.7.3 Addressing Perceived Usefulness

The smart phone has enhanced accuracy and speed in communication between the academy managers and the head office. Using mobile phones/smart phones would make it easier to run the school from anywhere at any time. The managers have their 'school in a box' because all the school data can be accessed anywhere as long as the smart phone is on.

Using smart phones would enable school managers accomplish more managerial tasks quickly. The school manager will be able to monitor both teacher and pupil attendance for the morning and afternoon sessions, ensure that all teachers have access to their daily lessons by synching in with their nooks, access the compiled report on how many pupils have paid up their fees as well as know whether teachers are on the correct sessions of the term or not. This is also necessitated by the fact that a smart phone allows for considerably more data to be received and transmitted, such as large e-mail attachments or data files from the main server from the main server at the head office.

Using mobile phones/smart phones would improve the school managers' managerial skills. The smart phone handset is loaded with personal organizers, electronic diaries, contact lists, and automatic reminders. The managers will be able send in timely reports and respond to any emerging issues effectively e.g. when parents want to know their pupils' fee balances; this can be

accessed at a click on the buttons of the smart phone. Thus, with the smart phone, efficiency, accuracy and timeliness are assured.

With the inbuilt digital cameras, the managers are able to take videos and photos of what is happening in their academies and relay this information immediately to the head office. This can include cases like pictures of flooding grounds and damaged classrooms or school equipment which in turn can ignite immediate action from the concerned parties. With the availability of WI-FI internet connection, communication is more immediate as compared to sending paper documents via the post office or courier services, which would ideally take many more hours, hence delayed response in emergency cases.

2.7.4 Addressing Perceived Ease of Use

Learning to operate the smart phone would be easier for the school managers. The smart phone is very easy to operate since all the applications are on the window screen and the user only needs to learn tapping on the correct app for the operations to open and run.

They will find it easier to interact and use the smart phones as compared to relying on paper work. A smart phone is a small gadget that has the ability to carry large volumes of data that are easy to access and use as compared to various box files with piles of paper that would take a lot of time perusing through to get access to an important document. The smart phone is very portable as compared to piles of papers in a box file.

2.8 Conceptual Framework

According to Creswell (2009), a variable is a characteristic or attribute of an individual or an organization that can be measured or observed and that varies among the people or organization

being studied at any particular time. According to Chapman and Slaymake, (2002) variables are distinguished by two characteristics: temporal order and their observation. In temporal order, one variable precedes another variable in time hence is believed to affect this other variable. Independent variables are those variables that affect the outcome of a study. On the other hand, dependent variables are those that depend on the independent variables; they are the outcomes or results of the influence of the independent variables. Intermediate variables mediate the effects of the independent variable on the dependent variable.

In this study, the context of mobile phone use and how it has impacted the management of education institutions are the independent variables. Better management services will be the dependent variable while speed in delivery of information and accuracy of information conveyed are the intervening variables.

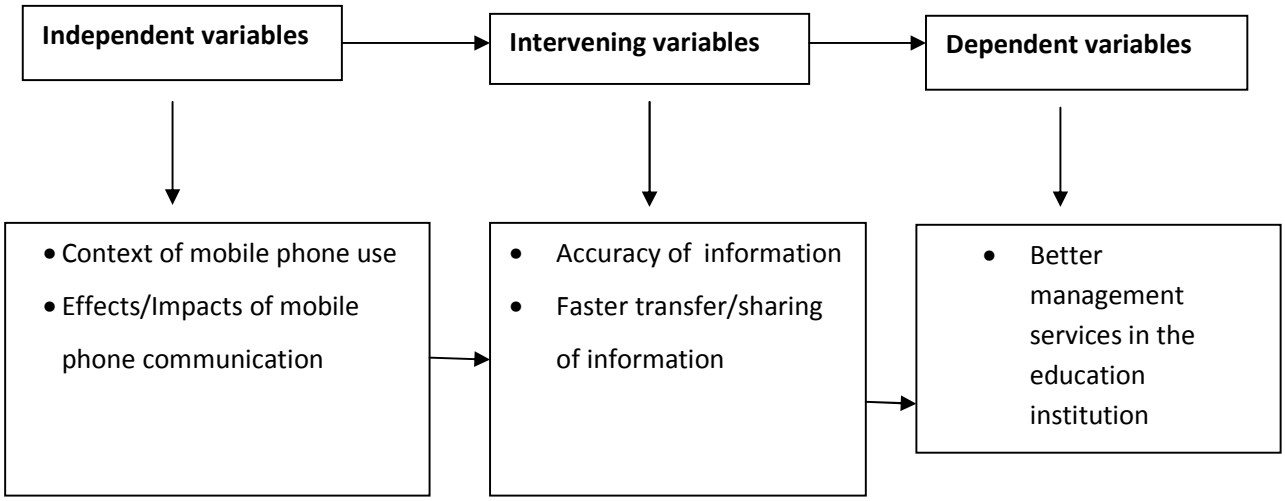


Figure 2: Study Variables

Source: Isaac Mutwiri, (2012**)**

CHAPTER 3: RESEARCH METHODOLOGY

3.1 Introduction

Kothari (2004) describes research methodology as a way of systematically solving the research problem. He further explains that research methodology is a science of studying how research is scientifically carried out. It gives the various steps that are generally adopted by a researcher in studying a research problem along with the logic behind them (Kothari, 2004). Mugenda, (2008) describes research methodology as the procedure which is followed in conducting a study. This chapter therefore sets out to focus on the research resign, target population, description of the sample and sampling procedures, data collection procedures and instruments, validity and reliability of the research instruments as well as the data analysis procedures.

3.2 Research Design

Kombo and Tromp (2006) referred to research design as the structure of research. Thus, it is the structure or outline of the research which is used to generate the answers to a research problem. Research is usually categorized based on the data collection methods, analysis and purpose.

Robert K. Yin (2009) defines a case study research method as an empirical inquiry that investigates an existing phenomenon within its real-life context; when the boundaries between phenomenon and context are not clearly evident; and in which multiple sources of evidence are used.The research object in a case study is often a program, an entity, a person, or a group of people. In this s study, the research object is a group of Bridge International academies' managers, teachers and parents. The researcher investigates the object of the case study in depth using a variety of data gathering methods to produce evidence that leads to understanding of the

case and answers the research questions. Case study research generally answers one or more questions which begin with "how" or "why."

This research design relies on both the quantitative and qualitative research approaches. These two research approaches are very effective in securing adequate evidence concerning the existing or current situations regarding the use of mobile phones in management of education institutions, as well as determining the necessary measures on the way forward. There are aspects of the study that require the use of quantitative values while others will require qualitative descriptions. The qualitative approach has also help the researcher to give more detailed and exhaustive explanations, Mugenda and Mugenda, (2003).

This research design thus validates the TAM model in this research.

3.3 Target Population

Busha & Harter, (1980) have defined a population as a set of objects or persons possessing at least one common characteristic, while Kombo and Tromp (2006) indicated that a population is a group of individuals, objects or items from which samples are taken for measurement.

The study has been carried out in Bridge International Academies which are located in Nairobi County. The researcher targeted a total of 8 academies out of the 28 Bridge International Academies within Nairobi County. The main target population was the academy managers who are directly involved with the use of smart phones in managing these academies, teachers and parents, who are affected in one way or the other by the use of mobile phone communication within the academies.

3.4 Sampling and Sample size

According to Mugenda O. and Mugenda A., (2003), sampling is the systematic process of selecting individuals or subjects from an entire population. The aim of sampling out certain individuals from the entire population is to get a representative sample whose characteristics can be objectively generalized on the entire population.

According to Webster (1985), cited in Kombo and Tromp (2006), a sample is a finite part of a statistical population whose properties are studied to gain information about the whole population. Gay (1992) proposed that a minimum sample of 10% for a large population and 25% to 30% for a small one is most appropriate during research. Each of the academies has 10 teachers hence the total number of teachers is 80. The researcher therefore conducted the research from 3 teachers per academy. There are approximately 50 parents per academy and the research therefore conducted the research on approximately 13 parents per academy.

This research employed purposive sampling, in which case or subjects were selected because they have the required or specific information with respect to the objectives of the study.

3.5 Data Collection Procedures and Research Instruments

3.5.1 Types of Data

The researcher relied on both primary and secondary data sources. Primary data was obtained directly from respondents through questionnaires. Secondary sources of data included the review of published materials and other internal sources through desk research from the Bridge International Academies' offices. Kombo and Tromp (2006) explain that secondary data sources

involve the collection and analysis of published materials and information from internal sources documents or electronically stored information.

The researcher first sought for a research permit to conduct the research from Bridge International Academies'management before administering the questionnaires to the respondents and later collecting data. The researcher also employed the help of research assistants.

3.5.2 Questionnaires

In this research, both close- ended question and open ended questions were used. The questionnaires were pre tested on colleagues with the aim of rephrasing vague questions, incorporating suggestions from the respondents as well as enhancing the reliability of the instrument. The researcher used both self-administered questionnaires and researcher administered questionnaires. The self-administered questionnaires were given to the academy managers and teachers since they have the ability to read and comprehend the questions, while the researcher administered questionnaires wereused on parents. The researcher used the physical drop and pick method with the self-administered questionnaires in all the 8 academies.

3.6 Validity and Reliability of the Research Instruments

Reliability refers to the degree to which a research instrument yields consistent results after repeated trials while validity is the degree to which the results obtained from data analysis actually represent the phenomena under study; thus, how accurate the variables in the study are (Mugenda and Mugenda, 2003). The research study was piloted first, whereby the researcher administered the questionnaires herself to the respondents so as to collect accurate data. The feedback given afterwards was relevant since it helped revise the questions and make the actual process more accurate and reliable.

3.7 Data Analysis and Presentation

Mugenda and Mugenda, (2003) state that data analysis refers to the process of examining the collected data from the research instruments with the aim of making deductions and inferences so as to uncover the underlying assumptions. The data analysis process involved collecting all the questionnaires, assembling all responses, as well as compiling and organizing the available data. This process helped the researcher to scrutinize the available data hence made relevant conclusions based on what the data was pointing at.

Data analysis was done using the Statistical Package for Social Sciences (SPSS) which is preferred because of its flexibility, speed and accuracy. Descriptive statistics and analyses such as frequencies and percentages were used to summarize the available data. Frequency tables as well as pie charts were generated and used. The qualitative data was then coded and organized into themes, describing the behavior and context in which they occurred. This was in accordance with the research objectives and was reported in narrative form along with quantitative frequency tables. SPSS was also used to code the quantitative data from the questionnaires. Qualitative data were thus used as a backup to the quantitative data in the frequency tables, (Wiersma, 1995). The data was presented using frequency tables, bar graphs and pie charts. The tables gave a summary of the responses in a manner that facilitated further comparison.

CHAPTER 4: RESEARCH FINDINGS AND DISCUSSION

4.1 Introduction

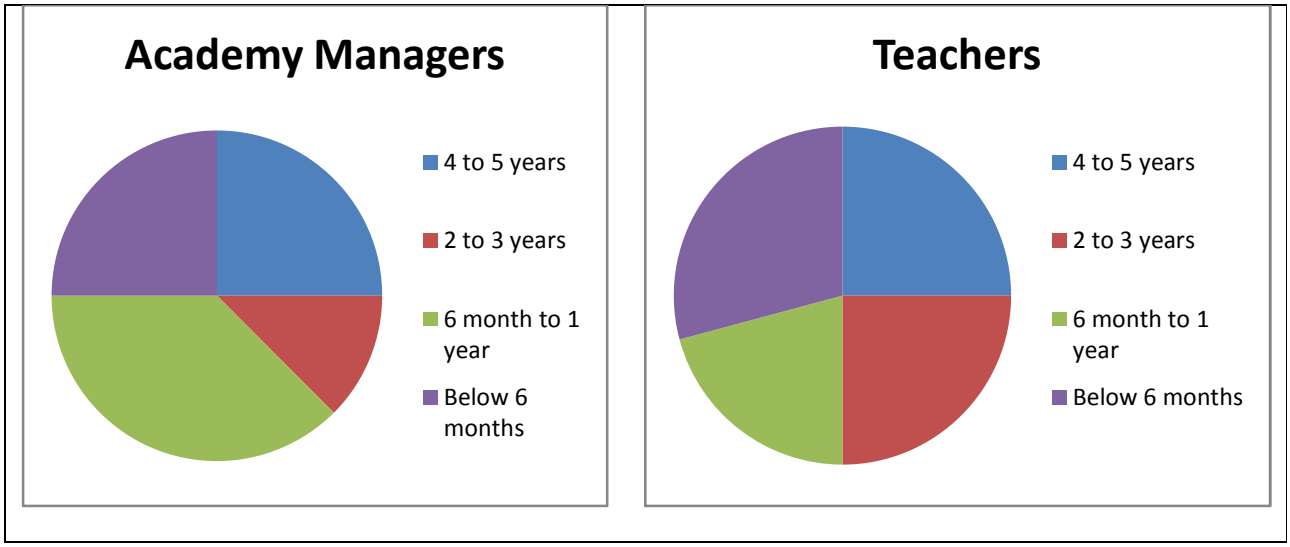
This study involved a total of 120active subjects out of the estimated 136 subjects: 8 academy managers-100.0%, 24teachers-100.0%and 88 parents-84.6%. Thus, a total of 94.87% of the respondents were actively involved in the study. The demographic findings of these respondents are described in the tables below:

Table 4.1Position in the Institution

	Frequency	**Percentage**
Academy manager	8	6.7%
Teacher	24	20.0 %
Parent	88	73.3%

From the research findings, it can be deduced that the overall response rate from the target population was high.

Chart 4.1 Years served at the academy



In terms of years of service at the various academies, the managers' responses were as follows: 25% of them have served between 5-4 years, 12.5 % have served between 3-2 years, 37.5% have served between 1 year- 6 months, while the remaining 25% have been in service for less than 6 months.

In the study, the teachers who responded have served in their respective academies as follows: 25.0% have served between 5-4 years, 25.0% between 3-2 years, 20.8% between 1 year and 6 months while the remaining 29.2% have been in service for less than 6 months.

Table 4.3Training on the use of the Smart Phone

	Yes	No	Total
Academy Managers	7	1	8
Teachers	0	0	0

The researcher attempted to find out whether the academy managers and teachers have received any formal training on how use the smart phone. 12.5% of the academy manager respondents reported that they have never received any formal training on the use of the smartphone while 87.5% indicated that they have been trained on the use of a smart phone.

Table 4.4Smart Phone communication versus speed and accuracy in Communication

	Frequency	Percent	Valid Percent	Cumulative Percent
Moderate extent	2	25.0	25.0	25.0
Great extent	6	75.0	75.0	100.0
Total	8	100.0	100.0	

In the study, the researcher intended to know the extent to which the use of the smart phone has improved the speed at which information is communicated to the head office. 25% of the respondents indicated that it has improved to a moderate extent while the remaining 75% indicated that the use has improved to a great extent.

Table 4.5Communication between the head office and the academy manager

	Frequency	Percent	Valid Percent	Cumulative Percent
Moderate Extent	8	100.0	100.0	100.0
Total	8	100.0	100.0	

When asked if the use of smart phone has improved communication between head office and managers, all of the academy manager respondents reported that the effect has been to a moderate extent.

Table 4.6Smart phone use versus faster sharing of information between the academy manager and the teaching staff

	Frequency	Percent	Valid Percent	Cumulative Percent
Moderate Extent	3	37.5	37.5	37.5
Great Extent	5	62.5	62.5	100.0
Total	8	100.0	100.0	

In terms of sharing information with the academy staff, 62.5 % of the managers indicated that the speed was to a moderate extent, while the remaining 37.5 % reported that it was to a great extent.

Table 4.7Smart Phone versus all round clock communication

	Frequency	Percent	Valid Percent	Cumulative Percent
Little Extent	1	12.5	12.5	12.5
Moderate Extent	2	25.0	25.0	37.5
Great Extent	5	62.5	62.5	100.0
Total	8	100.0	100.0	

With regards to all round clock communication using the smart phone, the following responses were obtained from the academy managers: 12.5% of them indicated that the effect is to a little extent, 25% indicated that it was to a moderate extent while the remaining 62.5 % indicated that it is to a great extent.

Table 4.8Smartphone communication versus real time transfer and sharing information

	Frequency	Percent	Valid Percent	Cumulative Percent
Moderate Extent	3	37.5	37.5	37.5
Great Extent	5	62.5	62.5	100.0
Total	8	100.0	100.0	

From the above table, 37.5% of the academy manager respondents indicated that smartphone communication has facilitated real time transfer and sharing information between various academy components to a moderate extent while the remaining 62.5% indicated this has been to a great extent.

Table 4.9Mobile phone communication versus conveyance of accurate information

	Frequency	Percent	Valid Percent	Cumulative Percent
Moderate	3	37.5	37.5	37.5
Great Extent	4	50.0	50.0	87.5
Very Great extent	1	12.5	12.5	100.0
Total	8	100.0	100.0	

The researcher attempted to know the extent to which the use of smart phone in the academies influences the conveyance of accurate information to parents and teachers. The following responses were obtained: 37.5 % indicated that accurate information was conveyed to a moderate extent, 50.0% of the academy manager respondents indicated that the information conveyed was accurate to a great extentwhile the remaining 12.5% indicated that accuracy in the information was to a very great extent.

How the smart phone has affected the relationship between the academy management and parents

The following are the responses given by the academy managers in relation to how the use of the smart phone has affected the relationship between the academy management and the parents:

i. Allows the parents to know what is happening at the headquarters.
ii. Parents have also appreciated the operations of the management.
iii. Has created loss of trust between the academy management and the parents. This happens especially due to inaccuracies in the fee details generated by the smart phone.
iv. Better service delivery-serving many parents on admission days within a short period of time

Table 4.11Effects of the smart phone on the management of several academy operations

	Yes	**No**	**% for Yes**	**% for No**
The use of smart phone communication has led to better management of the pupils' profiles	8	0	100%	0%
The use of the smart phone has positively affected the relationship between the academy manager and the parents**.**	8	0	100%	0%

	Yes	No	% for Yes	% for No
Smart phone communication has allowed for faster access and sharing of information between the academy manager and the teaching staff	8	0	100%	0%
Smart phone communication has led to better customer service	5	3	62.5%	37.5%

These findings indicate that with smart phone communication, students' profiles are managed with ease as compared to any other form of managing the same records. All the academy managers interviewed agreed to the fact that the use of the smart phone communication had positively impacted on their relationship with the parents. There was also a unanimous agreement on the fact the rate at which information was shared between the academy manager and the teaching staff was faster. With regards to better customer service, 37.5% of the academy managers interviewed disagreed to the fact that smart phones had bettered customer service within the academy while 62.5% agreed that they had noted better customer service with the use of the smart phone.

Teachers' Responses

Table 4.12 Smart phone communication versus accessto classroom/lesson content

	Frequency	Percent	Valid Percent	Cumulative Percent
Moderate Extent	9	37.5	37.5	37.5
Great Extent	15	62.5	62.5	100.0
Total	24	100.0	100.0	

Teacher respondents were asked the extent to which the use of smart phone has improved the access to classroom content and it was noted that 37.5 % indicated that it did to a moderate extent while the remaining 62.5 % reported that the effect was to a great extent.

Table 4.13 Smart phone communication versus the speed at which the allowed in class pupils sheets are generated

	Frequency	Percent	Valid Percent	Cumulative Percent
Moderate Extent	9	37.5	37.5	37.5
Great Extent	15	62.5	62.5	100.0
Total	24	100.0	100.0	

37.5 % of the teachers reported that to a moderate extent, the use of smart phone has improved the speed at which they receive information regarding those pupils who are allowed in class per day, while 62.5% of the respondents indicated that the speed at which this data is received is to a great extent.

Table 4.14 Smart phone communication versusaccuracy of data generated from classroom observations by the academy manager

	Frequency	Percent	Valid Percent	Cumulative Percent
Little extent	1	4.2	4.2	4.2
Moderate Extent	9	37.5	37.5	41.7
Great Extent	14	58.3	58.3	100.0
Total	24	100.0	100.0	

The teacher respondents were asked on their view regarding the extent to which the smart phone generates accurate data when the academy manager carries out classroom observations, and the following data was generated: 58.3% of them were of the view that the data was accurate to a great extent, 37.5 % reported that accuracy was to a moderate extent while the remaining 4.2% indicated that accuracy was to a little extent.

Table 4.15 Smart phone versus accurate generation of teacher attendance reports

	Frequency	Percent	Valid Percent	Cumulative Percent
No extent	1	4.2	4.2	4.2
Little extent	1	4.2	4.2	8.3
Moderate Extent	8	33.3	33.3	41.7
Great Extent	13	54.2	54.2	95.8
Very great extent	1	4.2	4.2	100.0
Total	24	100.0	100.0	

A majority of the teacher respondents (54.2%) were of the view that to a great extent, smart phones generate accurate teacher attendance records. This was followed by 33.3 % of the respondents who reported that accuracy of the attendance records was to a moderate extent, while little extent, no extent and very great extent, each attracted 4.2% of the respondents.

Table 4.16 Influence of the smart phone on teachers

	Frequency	Percent	Valid Percent	Cumulative Percent
Positively	24	100.0	100.0	100.0

All the teacher respondents unanimously agreed to the fact that the smart phone has positively influenced their work in the academy.

Advantages of using smart phone communication in the management of Bridge International Academies. (From managers and teachers)

Respondents reported that:

i. The smart phone allows the academy manager to access large volumes of data including all lessons for all classes within a short period of time. The academy manager can multi task at various points in the course of the day. He/she can assess and score teachers during lessons as well as record and send student details within the same period of time. It is therefore an efficient way to run the academy operations.
ii. The manager can access the academy data from anywhere and therefore attend to the needs and request of parents at any time and any day of the week.
iii. Allows the academy manager to serve many parents at a ago especially during the admission week.

The challenges encountered while using the smart phones

i. It was reported by the academy managers that the smart phones were fragile and therefore demand a lot of care.
ii. Poor connectivity causes a lot of delays when attending to teachers and parents.
iii. The smart phone does not always generate accurate data hence fails the reliability test.
iv. Only managers operate the smart phones and in their absence, most of the academy operations cannot be affected.

v. Teachers also noted that the synching in of nooks to access lesson content is always delayed by poor internet connectivity.

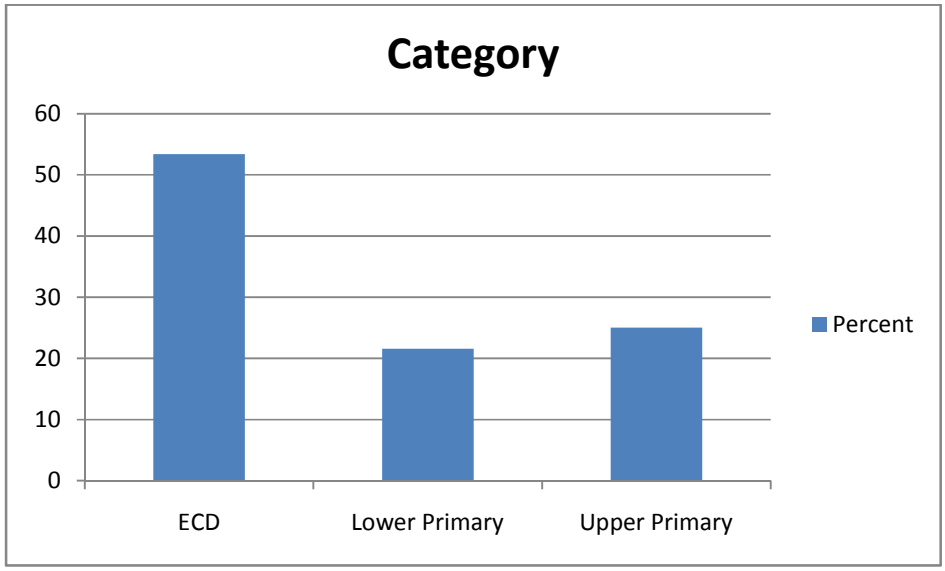
vi. The teachers noted that since they have not been trained on the use of the smart phone, they cannot be of any help in the absence of the academy manger

vii. Teachers also reported that the smart phone can only allow them to record their attendance once the manager is within the academy compound. Any teacher who comes in earlier than the manager stands disadvantaged since the synching in process does not pick an earlier time

Parents' Responses

In the study, the researcher prepared a total 104 questionnaires to be used while interviewing parents. At the end, only 88 parents could be reached to give all the information the researcher was seeking. This represents 84.64 per cent of the questionnaires. In each academy, the researcher had allocated 13 questioners for the parents and from the data collected; approximately 11 questionnaires were used on parents per academy.

Graph 4.1 Pupils class categories from the parents who responded



In the chart above, the researcher attempted to understand how these parents' children were distributed in the Bridge International academies' class categories. 53.4% of the respondents had their children in ECD, 21.6% have their children in lower primary while the remaining 25.0% have their children in upper primary.

Table 4.18 Smart phone versus reception and delivery of fee updates

	Frequency	Percent	Valid Percent	Cumulative Percent
Agree	48	54.5	54.5	54.5
Disagree	40	45.5	45.5	100.0
Total	88	100.0	100.0	

When asked to indicate whether they agreed to the above statement or not, 54.5% were in agreement to the fact that the use of smart phone communication had facilitated speedy reception and delivery of fee updates to parents while the other 45.5% disagreed to this view.

Table 4.19 Use of the smart phone versus service delivery to parents

	Frequency	Percent	Valid Percent	Cumulative Percent
Agree	40	45.5	45.5	45.5
Disagree	48	54.5	54.5	100.0
Total	88	100.0	100.0	

In terms of the pace at which parents are served by the academy manager, 45.5% of the parents indicated that the smart phone has actually facilitated faster service delivery while 54.5% were in disagreement.

Table 4.20 Use of smart phone versus accuracy of fee payment data

	Frequency	Percent	Valid Percent	Cumulative Percent
Agree	30	34.1	34.1	34.1
Disagree	58	65.9	65.9	100.0
Total	88	100.0	100.0	

30% of the parent respondents agreed to the fact that the smart phone generates accurate fee payment records while 58% were of a contrary view.

Advantages of the smart phone

i. It allows the academy manager access fee updates faster from the head office and report to the parents.
ii. It helps the academy manager know which pupils have not paid fees as fast as possible and therefore send out reminders.
iii. It helps the academy manager serve many parents better within a short period of time.The manager can even serve the parents while away from the academy as long as she/ he has the smart phone
iv. It gives accurate data on most occasions
v. It is a good monitoring tool on teachers

Challenges noted by parents on the use of a smart phone

i. It does not always give accurate information as required especially on pupils' fee payment records.
ii. It has forced parents to operate on mutual trust with the academy manager since the smart phone cannot allow the academy manager to print or provide receipts as proof for having received the updates from the head office regarding the pupils' fee payments.
iii. It wastes so much time since the academy manager relies on internet to be able to access any information that the parent is looking for.

Advantages of using smart phone communication in the management of Bridge International Academies. (From managers and teachers)

Respondents reported that:

i. It allows the academy manager to access large volumes of data including all lessons for all classes within a short period of time. The academy manager can multi task at various points in the course of the day. He/she can assess and score teachers during lessons as well as record and send student details within the same period of time. It is therefore an efficient way to run the academy operations.
ii. The manager can access the academy data from anywhere and therefore attend to the needs and requests of parents at any time and any day of the week.
iii. Allows the academy manager to serve many parents at a ago especially during the admission week.

The challengesof using Smart phones as noted by mangers and teachers

i. Lack of timely technical support incase the smart phone is not functioning well.
ii. It was reported that the smart phones were fragile and therefore demand a lot of care.
iii. Smart phones experience poor connectivity, this cause a lot of delays when attending to teachers and parents.
iv. The smart phone does not always generate accurate data hence fails the reliability test.
v. Only managers operate the smart phones and in their absence, most of the academy operations cannot be effected.

4.2 Discussion of the Findings

According to the Global E-Schools and Communities Initiative – (GESCI)journal of 2013, the education system is a complex system that requires good management and administration if it is to be efficient and effective. ICT have proven effective tools in almost every other industry, especially the private sector and increasingly in the public sector as well, in supporting management and administration.

4.2.1 Speed and accuracy of smart phones

From the study, it was noted that the smart phones being used to manage the Bridge International Academies have proven to be quite fast and accurate in terms of communicating information from one point to the next. From the responses received, teachers indicated that they are able to receive their daily lessons fast enough, and therefore the lessons start at appropriate times on most of the days. This process involves the teachers synching in their nooks to the smart phone which contains all the lessons for all classes per day. The academy manager is therefore able to serve all the teachers in the morning as fast as possible once they synch in their nooks. These lessons are sent onto the smart phone from the content development team that works hand in hand with the software team at Bridge International Academies.

The managers also indicated that the smart phones help them serve parents' queries fast enough since all the academy data is contained in one tool-the smart phone. It takes less time to download the students' fee updates and generate the allowed in class records hence parents are able to know when their monthly payments are due. It is a timely gadget since it helps academy managers access the data just when they need it. This also helps promote transparency and openness between the academy manager and the parent fraternity.

In terms of customer service, there are hardly any long queues at the academies since all money payments are transacted via the parents' mobile phones as the manager receives updates and all the pupils' profiles are quickly generated on the smart phone. The parents do not therefore queue to make payments at the academy; the process has been made faster by the generation of updates via the smart phone. This tool serve faster because it has the capacity to handle large volumes of the data that the manager can need at any one time during his/ daily operations within the academy. The smart phone thus enables direct interaction between the academy management, teachers and parents hence fostering community cohesion and engagement.

The monitoring and evaluation process on teachers has also been made faster because of the smart phone. The manager walks around the classes and is able to observe and evaluate the teaching process in various classes while standing by the window. This is because the smart phone has been installed with the teacher assessment sheets that are easier to work on compared to carrying sheets of observation papers around the academy compound.These data is quickly sent to the head office once it's complete. The manager is able to assess and score all the 10 teachers in the academy per day using the smart phone.

In terms of accuracy, a majority of the respondents indicated their strong belief in the fact that the smart phone has the ability to generate accurate data. These included the teachers who mentioned that at least they are able to get an accurate list of pupils allowed in class per day based on what is contained in the pupils' profiles from the smart phone. Without these lists, teachers stand being penalized for teaching those pupils who are not allowed in class because they have not been cleared in the smart phone records.

Parents believe that the smart phone is accurate and that is why many of them have managed to enroll their children in various class categories at the academy. Teachers also believe to a great extent the smart phone generates accurate attendance records which determine their monthly payments.However, a large proportion of the respondents indicated that to some extent the data generated by the smart phone is not always accurate. Most of their responses were based on the fact that the smart phone relies heavily on the use of internet connection and therefore any interference in connection can affect the data. It can therefore be argued out strongly that the smart phone is a fast and accurate communication tool to be used by academy managers to run the school operations effectively.

4.2.2 Advantages of using mobile phone communication in managing Bridge International Academies.

Education management is a complex process that requires reliable, timely, userfriendly data (Naidu and Jasen, 2002). ICTs can be valuable for storing and analyzing data on education indicators; students 'assessments; educational, physical and human infrastructure; and cost and finance (Campbell and Sellbum, 2002).

All the respondents had various advantages that they attributed to the mobile phone communication at the Bridge International Academies. This mediated form of communication in managing these academies has benefitted teachers greatly since they no longer sit long hours preparing lesson plans and schemes of work. The manager must therefore ensure that all his/ her teachers have functional nooks which are allowed to synch in with the manager's smart phone so that they load the lesson contents. They therefore have ample time to prepare lesson materials and get the pupils ready for the day.

The managers on the other hand indicated that they stand greatly advantaged by this form of communication because they no longer need to do a lot of paper work while managing their academies. They access large volumes of data and use it at the comfort of their seats. They do not handle any cash payments and this saves them the hassle of accounting at the end of the day. They also noted that smart phone communication is very efficient since the gadget itself is easy to carry around and it allows them to multitask hence saving them on time and energy. It is also because of its reliability in terms of generating accurate data that it has been trusted by the management to operate in all the academies.

With reference to the Technology Acceptance Model advanced by Davis, (1989), the Bridge International Academies' managementperceived the smart phone as an easy to use communication tool and at the same time a tool that helps the managers serve teachers and parents in the most efficient way; saving them on time, cost and energy.

4.2.3 Challenges involved in the use of mobile phone communication at Bridge International Academies.

According to the Becta report of 2003, (Becta, 2003), "unreliable equipment" was identified as one of the barriers to the use of ICT in educational set ups. In this study, a larger percentage of the respondents indicated that poor internet connectivity has been a barrier to the effectiveness of mobile phone use in the management of the academies. Thus, the smart phone cannot function without proper internet access.

Butler & Sellbom (2002) also noted that ICT equipments are at times unreliable tools hence they cannot be depended on to be 100% accurate. With this, the manager faces the challenge of

explaining to teachers and parents why the data generated is not as accurate as they would expect it to be.

The manager respondents also indicated that they face the challenge of technical support in cases where the smart phone is not functioning properly. It takes long for the field officer assigned to an academy to sort this issue out and at times where the issue is being resolved via phone, the results are not always satisfactory.

It was also noted from the study that only managers are trained on how to use the smart phone. This causes major delays in service delivery in cases where the manager is not present or in case he/she is absent. Since teachers are not trained on handling the smart phone, they cannot offer any assistance at such times.

In terms of years of service at the academies, there was no notable disparity in the responses given by the respondents. Both the teachers who had been there between 5-4 years and those who had been there for less than 6 months had almost similar views to the various questions from the questionnaires. This indicated that no changes had been made to make the mobile phone communication any better since its adoption in the management of the Bridge International Academies.

CHAPTER 5: SUMMARY AND RECOMMENDATIONS

5.1 Summary

Communication is a vital aspect of human existence and it greatly affects all human relationships. Modes of communication have beenevolving through various faces: from oral communication to now mediated communication; where technology has taken precedence.The emergence and growth of information and communication technologies around the world is affecting all spheres of life including education. Maki (2008) stipulates that ICTs play a vital role in supporting powerful, efficient management and administration in the education sector. Thesetechnologies can be used from student administration to various resource administration issues in an education institution. According to Zainally (2008), ICTs provide several facilities and possibilities for educational administrators to perform their tasks effectively (p. 283). In this digital era, educational stakeholders are therefore called upon to embrace the new technologies so as to cope up with the new world order.

In this study, Bridge International Academies as the focus point is one of the education institutions in Kenya that has embraced mobile phone communication in the management of all its academies. Bridge International Academies' mission is to provide quality education to the most impoverished communities in Kenya at an affordable price. However, this mission cannot be attained if the communication structures are not put in order as required.

The academy managers are the sole instructional leaders, community leaders -for the academies, money managers, marketers as well as the general managers. All these functions involve dealing with the academy teaching staff, pupils, parents and the surrounding public/community. The principal management of the academies therefore saw it necessary to develop a communication

approach that would enable the managers to effectively and efficiently perform their core functions at the academies. They thus settled on the mediated form of communication-use of the smart phone. This study was aimed at assessing how the mobile phone communication is being used to manage the Bridge International Academies in Nairobi County.

This was a case study that employed both quantitative and qualitative approaches of gathering data. The respondents were: the academy managers, teachers and parents within the communities where the academies are established. The data was collected from a total of 120 respondents and analyzed using SPSS. These data analysis was presented in the form of tables, bar graphs and pie charts.

From the study findings, the smart phone is as effective and efficient communication tool in the management of education institutions. It can be used to generate accurate data, provide a better means of customer service to parents as well as enable access of large volumes of data like instructional materials for teachers to use.

The researcher however calls upon more researchers to revisit this study area so that more data is generated with regards to how mobile phone technology is being used and can be used to improve the management of education institutions in Kenya.

5.2 Recommendations

Based on the findings of this study, the researcher has the following recommendations to make:

Bridge International Academies' executive management should look into better ways of enabling the academy managers' access quality internet services fromthe service providers available in the

country. This will go a long way in helping them contain the many challenges that this management approach has so far encountered.

Adequate technological training should be given to both the academy manager and at least 1 or 2 of the teaching staff so that they can support the manager whenever need arises. The technical experts at the head office should frequently visit the academies to give in-service training to the two teachers and academy manager on the use of new updates on the smart phone.

The smart phone application modes should be frequently monitored and updated to facilitate the generation of accurate data at all times.

The Information Technology department at the head office should develop an application that will allow the manager to send fee updates to the parents regardless of the model of their mobile phones. This will allow parents the privilege of enjoying the benefits of the smart phone in their academy without having to physically appear in the academy seeking for updates from the academy managers.

All educational stakeholders should embrace new forms of technology by adopting better ways of managing their institutions. This can be done by them following through what institutions like at Bridge International Academies are doing. With the advent of many new technologies in the market, they can be able to find one that suits their needs better.

5.3 Further Research

From the findings of this study, there are many gaps that have been created that the researcher suggests need to addressed by further researches.

There is need for a comparative study to be done so that we compare and contrast what is happening in the traditional education management set up to what is happening in the technologically managed education set ups.

At Bridge International Academies, teachers are considered to be the sole classroom managers. These teachers use a gadget called a ‘nook’ to run their classroom affairs. The researcher for this study therefore calls upon another researcher to conduct a study to find out how the nook is used a management tool in the classroom. The results of such a study can be used to state the benefits of technology in both the classroom and the school at large. Moreover, the same results can be used to state the effects of technology in an education set up.

The researcher also suggests that upcoming researchers could use other research designs and methods of collecting data with regards to this same area of study so that the study findings can be compared for validity purposes.

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APPENDICES: QUSTIONNAIRES

APPENDIX 1.1 ACADEMY MANAGERS' QUESTIONNAIRE

Section A: Demographic Information

1. Name of the Bridge International Academy working with: _____

2. Your position in the Institution: _____

3. Number of years served at the Institution: (Tick appropriately)

5-4 years [ ] 3-2 years [ ]

1 year-6 months [ ] Below 6 months [ ]

4. Did you receive any training on how to the use the smart phone? (Tick appropriately)

Yes [ ]

No [ ]

Section B:

5. Below are several statements with regards to the effects of the smart phone on speed in communication. On a scale of 1-5 (where 5=very great extent, 4= great extent, 3= moderate extent, 2= little extent and 1= no extent), please rank your level of agreement with each of the statements. (Tick appropriately)

	5	4	3	2	1
The use of the smart phone has improved the speed at which the academy manager runs the academy operations.					
The use of the smart phone has improved the speed at which information is communicated to the head office					
Smart phone communication enhances faster sharing of information between the academy manager and the staff					
Smart phone communication has allowed for all around the clock communication					
Smart phone communication has facilitated real time transfer and sharing of information					

6. To what extent has the adoption of the mobile phone communication enabled the academy managers convey accurate information? (Tick appropriately)

Very great extent [ ]

Great extent [ ]

Moderate extent [ ]

Little extent [ ]

No extent [ ]

7. How has smart phone communication affected the relationship between the academy manager and the parents?

i. _____
ii. _____
iii. _____

8. Below are several statements with regards to the effects of smart phone communication and the management of Bridge International Academies. Indicate whether you agree or not.

i. The use of smart phone communication has led to better management of the pupils' profiles
Agree [ ] Disagree [ ]

ii. The use of the smart phone has positively affected the relationship between the academy manager and the parents.

Yes [ ] No [ ]

iii. Smart phone communication has allowed for faster access and sharing of information between the academy manager and the teaching staff.

Yes [ ] No [ ]

iv. Smart phone communication has led to better customer service.

Yes [ ] No [ ]

Section C: Advantages of using the smart phone.

9. Name four advantages of using smart phone communication in the managing of the Bridge International Academy.

i. _____
ii. _____
iii. _____
iv. _____

Section D: Challenges encountered while using the smart phone to manage Bridge International Academies

10. Name three challenges have been encountered while using the smart phone to manage the Bridge International Academy?

i. _____
ii. _____
iii. _____

APPENDIX 1.2 TEACHERS' QUESTIONNAIRE

Section A: Demographic Information

1. Name of the Bridge International Academy working with: _____

2. Your position in the Institution:

3. Number of years served at the Institution: (Tick appropriately)

5-4 years [ ] 3-2 years [ ]

1 year-6 months [ ] Below 6 months [ ]

4. Have you received any training on the use of the smart phone? (Tick appropriately).

Yes [ ] No [ ]

Section B: Smart Phone communication versus speed and accuracy in Communication

5. Below are several statements with regards to the effects of the smart phone on speed in communication. On a scale of 1-5 (where 5=very great extent, 4= great extent, 3= moderate extent, 2= little extent and 1= no extent), please rank your level of agreement with each of the statements. (Tick appropriately)

	5	**4**	**3**	**2**	**1**
The use of the smart phone has improved the speed at which the teacher can access the classroom lesson content					
The use of the smart phone has improved the speed at which information regarding the allowed in class pupils is generated					
The use of the smart phone has allowed for accurate scoring from the classroom observations					
The use of the smart phone has allowed for accurate generation of teacher attendance reports					
The use of the smart phone has allowed for accurate calculations of teachers' salaries based on attendance					

Section C: Advantages and Disadvantages of the smart phone

6. Name three advantages of reliance on the use of the smart phone.

i. _____
ii. _____
iii. _____

7. How has the smart phone influenced your work as a teacher? (Tick appropriately)

Positively [ ]

Negatively [ ]

8. Name any four disadvantages of using the smart phone as a communication tool in your academy.

i. _____
ii. _____
iii. _____
iv. _____

APPENDIX 1.3 PARENTS' QUESTIONNAIRE

Section A: Demographic Information

1.Name of the Bridge International Academy where your children attend school**:** _____

2. Your position in the Institution: _____

3. Which class category is your child in?

Upper primary [ ] Lower primary [ ] ECD [ ]

Section B: Smart Phone communication versus speed and accuracy in Communication

4. Below are several statements with regards to the effects of the smart phone on speed in communication. Kindly indicate whether you agree or disagree with the statement.

i. The use of the smart phone has improved the speed at which I receive my child's school fees payment updates. Agree [ ]Disagree [ ]
ii. The use of the smart phone has improved the speed at which the academy manager serves me as a parent. Agree [] Disagree [ ]
iii. The use of the smart phone always gives accurate information regarding pupils' fee payments and balances. Agree [ ] Disagree []

5. Name any four advantages of the use of the smart phone by the academy manager

i. _____

ii. _____
iii. _____
iv. _____

6. .Give any disadvantages of the use of the smart phone as an academy management tool.

i. _____
ii. _____
iii. _____
iv. _____