

The Determinants of Adoption of Information and Communication Technology (ICT) by Educational Institutions for Improved Educational Services Delivery: Review of the Literature

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Abstract: *Information, Communication and Technology is used for services delivery including educational services. Schelin (2003) argues that ICT contribute effectively to the administration, coding, storage and processing of a huge amount of digital information created, while Slenning (2000) acknowledges that the introduction of information technology updates many aspects of activities in the educational community; the basic ones are the communication between them and the teaching practice. Haddad (2002) focuses on the operational and financial benefits brought about by the introduction of ICT in the educational organization and management, and accordingly Pfaff and Simon (2002) emphasize the cost reduction due to limited disposal of printed material. The review main objective was to find out the determinants of ICT adoption by educational institutions for improved educational services delivery in developing countries and in African countries in particular. It was found out that most developing countries in general and African countries in particular are struggling to adopt ICT in education for services delivery. However, they are faced with some challenges among them are: lack of management support, lack of financial resources, lack of infrastructure, national culture negatively affects ICT adoption as well as government policies. These were regrouped into individual factors, organizational factors, technological context, and external environmental factors influencing ICT adoption by educational institutions for services delivery. it was not clear to what extent educational institutions adopted ICT for services delivery. therefore, it was recommended that the extent to which those institutions adopted ICT should be further investigated in the African setting and more importantly in the East African Region.*

Keywords: ICT, ICT adoption, educational services, determinants of ICT adoption, services delivery.

1. Introduction

Deliverance of public goods to citizens has been an issue of concern to researchers and politicians around the globe (Diaz-Cayeros, Magaloni, & Ruiz-Euler, 2014:2) and it is the main responsibility of governments to deliver such public goods (Kamei, Putterman, & Tylran, 2015:40). Education among others is considered one of the public goods. Education is very important in the country for the wellbeing of the people as well as for socioeconomic development. Governments have the sole responsibility to enhance and promote education and provide access to citizens. The role of government in education differs from one country to another depending on the nature of the government itself as well as the resources it has. However, all governments bear the responsibility of providing educational services to their citizens.

Governments use technology to transform their work and better their interaction with their citizens through e-Governance (Estevez and Janowski, 2013). Information, Communications and Technologies (ICTs) are used extensively by governments in order to deliver services to citizens (Dwivedi, Weerakkody & Janssen, 2012; Ebrahim & Irani, 2005). Information, communications and Technology (ICT) is define as the use of technology/ technologies for collection, recording, reserving, processing, researching, transfer and receipt of information led to teaching/ learning scope (Bidarian & Mohammad, 2011). ICT includes: internet, media and broadcasting, libraries and centres for documents, commercial information, network-based information, and other information and communication activities (UN, 1999). Another definition of ICT by UNESCO (2002) is: it can be considered as "Informatics Technology" in relation to other technologies specially communication technology. The use of ICTs to deliver services to citizens has great advantages over the traditional channel such as: increase transparency and eliminates corruption, it is cost effective, poverty reduction and avails development opportunities (Krishnan, Teo, & Lim, 2013; Janssen, Kuk, & Wagenaar, 2008; Soriano, 2007). Since its inception in the 1970s and 1980s it has influence the life and all sorts of works of humankind up-to-date. The field of education is no exception to the use and integration of ICT.

In the previous decade many reports have been published on the need to improve access to and the quality of education such as the initiative of increased government investment to support the adoption of information and communication technology (ICT) in teaching, learning, and administration at educational institutions and public schools (Nurjanah, Santoso, & Hasibuan, 2016). It is

believed that ICT can transform teaching and learning as well as improving administration in educational institutions as well as schools, hence promoting citizens access to education services.

Information and communication technology devices related to education such as teleconferencing, email, audio conferencing, television lessons, radio broadcast, interactive radio counseling, interactive voice response system, audio cassettes and CD ROMS have been used in education differently for a long time (Sharma, 2003; Sanyal, 2001; Bhattacharya and Sharma, 2007). The increase of the use of ICT in education was as a result of the linkage of education to citizens' lifelong learning in an information society (Pelgrum and Law, 2003). Kofi Annan, (cited in Garigga and Mele,2004) stated that "ICT has the potential not only to improve education, but also to empower people, strengthen governance, open up new markets and galvanize our efforts to achieve the Millennium Development Goals". Most educators believe that technology has the potential to solve many of the pressures associated with the societal change in attitude and delivery of education around the globe (Franklin and Peat, 2001).

ICT adoption by government educational institutions (especially ministries, educational offices, teacher training centers and schools) to provide educational services will result in effective and equitable distribution. The services include teacher training, curriculum and textbooks, teachers' benefits and remunerations, better communication, data storage and dissemination. Government institutions exerted efforts to introduce computers as well as ICT in their offices. Educational institutions introduced computers and ICT systems for data collection, analysis and dissemination of information. Those factors were regrouped into personal characteristics (gender, age, and experience), organizational factors, technological factors, external environmental factors which influence the adoption of ICT by educational institutions in Juba city, South Sudan.

Government use of ICTs to deliver educational services to citizens in an efficient, effective and in transparent manner is a viable solution for access to educational services. This will enable the educational services to reach the vulnerable citizens in the rural areas. Use of ICTs to manage educational institutions, improve communication between the institutions themselves and the citizens, access to education, access to curriculum and text-books content, foster teacher training and eventually enhance access to quality educational services will be the outcomes of ICT adoption.

2. ICT adoption in education

ICT is used as a tool for teaching and learning as well as an important means of administrative organization (Tagalou et al., 2015). 'Educational management' is used scientifically to refer to basic administrative functions of educational institutions and learning organizations which include financial management, human resources management and development of relations within the society (Athanasoula-Reppa, 2008).

The use of ICT in higher education can be termed 'e-administration' (Meenakumari, J. and Krishnaveni, 2011). They further divided e-administration into knowledge administration and information administration. It was revealed that ICT greatly enhanced educational administrators' performance through improving cross communication at the managerial level (Kayiwa et al., 2016). Although multiple researches agreed that the use of ICT is useful in management; Meenakumari and Krishnaveni (2011) stated that "it was found that demographic factors do not have a major impact on e-administration in higher education institutions".

Schelin (2003) argues that ICT contribute effectively to the administration, coding, storage and processing of a huge amount of digital information created, while Slenning (2000) acknowledges that the introduction of information technology updates many aspects of activities in the educational community; the basic ones are the communication between them and the teaching practice. Haddad (2002) focuses on the operational and financial benefits brought about by the introduction of ICT in the educational organization and management, and accordingly Pfaff and Simon (2002) emphasize the cost reduction due to limited disposal of printed material.

Information, communication and technologies present a different learning environment from the traditional one in that they foster critical thinking and research since it presents a multitude of information and resources (New Media Consortium, 2007). Incorporation of ICT in education will create a learning environment where active learning and high-order thinking are facilitated and cooperative learning is fostered (Alexander, 1999; Jonassen, 1999 and Suman, 1998).

Placement of ICT equipment in classrooms presents an opportunity to the students to have access to technology (Kennewell et al., 2000). In addition, educational environment of ICT includes the development of software as well as websites which will introduce students to technology (Noor-Ul-Amin ib id).

The use of ICT in classrooms induces students' motivation because it changes the way teachers teach as well as how students learn. Moreover, the use of various ICTs such as videos, television and multimedia, colorful moving images is challenging and motivating students (Noor-Ul-Amin, 2013). Students who are taught by the use of ICTs are engaged in learning process because

computers are used as sources of information as well as cognitive tools (Reeve and Jonassen, 1996). Students are engaged and inspired by ICT thus, it influences them to adapt it (Long, 2001).

The relationship between ICT use and students' performance has been covered by extensive literature for the last twenty years. Students learn better by the use of ICT because it improves communication between them and their teachers (Valasidou and Bousiou, 2005).

Telecentres and mobile phones can play a big role in providing e-government services in rural areas. Furuholt and Saebo (2017) argue that if telecentres are combined with mobile phones they can perform complex tasks as well as simple ones respectively. They further claimed that if there is access to broadband there is a hope that the educational sector which lacks teachers and text books can get e-learning chances for the purpose of improving quality of education.

Artificial Intelligence can provide high quality services, perform complex analysis understand needs of citizens. In addition, it does not discriminate and not bias, moreover it is reliable and avails services at any time 24/7/365. AI can provide personalized high quality services to citizens. Personalized education has high benefits for students but it is difficult to offer in the traditional setting with large number of students in classrooms, however it can be achieved by the use of artificial intelligence (AI), it can also support students by virtual teaching in the absence of the teacher, analyze students' progress and reduce school drop-out-rates (Capgemini, 2017). In universities for instance, it is believed that chatbots will play a significant role in assisting teaching. Some challenges which face universities in recent years are: the number of students increased lecture halls, there is a rise of online open courses, no individualized and effective learning, weak learning outcomes, high dropout rates, and dissatisfaction (Nicol and Macfarlane-Dick, 2006; Brinton et al, 2015; Eom et al, 2006; Hone and El Said, 2016). Chatbots can be used solve these challenges since they are being used in other sectors as personalized assistants in mobile phones for technical help online, as well as for health interventions (Serban et al, 2017).

2.1. ICT and services delivery

The relationship between ICT and service delivery have been highlighted by numerous studies in e-government. At the outset in the definition of e-government is a utilization of ICT to transform internal and external public sector relationships with the intention of optimizing public service delivery and citizens' participation (Sarrayrih and Sriram, 2015). ICT and other technologies are used to deliver public services, efficiently, reduce cost, better quality, and provide information and communication to citizens (Gil Garcí'a and Pardo, 2005; Joseph, 2014). Generally, e-Government can be said it is the use of ICT by government for the purpose of provision of services to citizens. The more ICT is adopted and used the more services are delivered to citizens effectively and efficiently with improve quality.

Numerous studies such as Berton et. al., 2010; Naik et. al. 2012 asserts that ICT deliver basic services such as finances, health and education to many citizens in an accessible and affordable ways. (Oluwatobi, Olurinola, & Taiwo, 2016) Oluwatobi et al. (2016) argues that ICT enables the delivery of education in an affordable and accessible way than the conventional means. He asserted that ICT will enable more people to access education in Sub-Sahara Africa which will eventually lead to development of human capital and sustainable development. It can be concluded from these studies that the relationship between ICT and educational services delivery exist.

2.2. ICT and education services delivery

Information, Communications and Technology use in education can broadly be divided into two: ICTs for education and ICTs in Education (Noor-UI-Amin, 2013). He further explained these two broad components by saying that ICTs for education is the use of ICTs for teaching and learning process i.e. in the classroom to enhance teaching and learning process while ICTs in education is the adoption of general components ICTs in the teaching and learning process i.e. to enhance quality and accessibility of education.

Information and communication technology can enhance education accessibility. Due to its flexibility of delivery of education ICT can allow learners to access knowledge anywhere anytime (Noor-UI-Almin, 2013). It can influence teaching and learning since the process is learner, not teacher-driven. Similarly, it will help learner's lifelong learning as well as quality learning improvement (ib. id.). Moore and Kearsley (1996) state that technology-facilitated educational programs are geographically flexible as well as they remove constraints that face learners with special needs. Noor-UI-Amin (2013) argues that "One of the most vital contributions of ICT in the field of education is easy to access to learning. With the help of ICT, students can now browse through e-books, sample examination papers, previous year papers, etc. and can also have easy access to resource persons, mentors, experts, researchers, professionals, and peers - all over the world". This flexibility of education by the use of ICT availed just in time learning and provided learning opportunities for many disadvantaged learners (Young, 2002). Students can learn any time as well as teachers can teach any time using ICTs. However, the choice of how much time within the 24x7 is the challenge that will face educators in the future (Young, 2002).

General education worldwide has drawbacks such as lack of learning materials, teachers, the remoteness of education facilities, high dropout rates and the like (UNESCO, 2002). Information Communication and Technology can provide a solution to all those problems by using it to reduce the cost, solve the problem of lack of teachers as well as the issue of poor quality education in addition to barriers of distance and time (S. Y. McGorry, 2002) (McGorry, 2002).

ICT allows access to new knowledge such that people can always keep up to date with new developments (Plomp, Pelgrum, and Law; 2007). Communication barriers such as space and time can be removed by ICT (Lim, and Chai, 2004). It can also eliminate geographical barriers such that students can log in from anywhere (Cross, M. and Adam, 2007; Mooij, 2007; Sanyal, 2001; UNESCO, 2002 Bhattacharya and Sharma, 2007). Bhattacharya and Sharma (2007) and Cholin (2005) state that ICT can be used to create digital resources such as digital libraries so that students and teachers can access information any time anywhere. Education can be disseminated faster by the use of ICT to underprivileged groups (UNESCO, 2002; Chandra, and Patkar, 2007). Bottino (2003) and Sharma, (2003) state that improvement of the performance of teaching and administration can be achieved by the use of ICT as well as its capacity to develop relevant skills in the underprivileged communities. ICT can improve the quality of education because it provides practical learning, ample time for discussion, self-learning, problem-solving and information analysis and critical thinking besides communication and collaboration for learning (Yuen et al, 2003).

Hoque & Alam (2010) investigate ICT-based higher education in Bangladesh and find that students prefer the flexibility in the learning process through ICT-based education than the traditional method. According to them, distance education service delivery became effective and efficient with the use of ICT-based education system. Similarly, a report compiled by Carlson (2013) about the use of ICT to deliver education services to children and youth in an environment affected by crisis and/or conflict reveals that educational technology enables positive learning experiences and improve learning outcomes. He examined these educational technology programs: mobile phone, internet computer labs enabled by the internet and interactive radio; these programs were to enhance students' and teachers' learning, support primary students and youth training and be used in primary education respectively.

Soi (2017) conducted longitudinal research on 80 officials of Teachers Service Centre (TSC) and 50 teachers in public schools in Nairobi County to find out the impact of ICT on service delivery at the TSC. It was found that TSC employed ICT in its activities. She concludes that TSC will be an excellent organization in service delivery if ICT practices are implemented properly.

3. Determinants of ICT adoption for educational services delivery

3.1. Individual factors affecting ICT adoption by educational institutions

Individual factors such as top management support, ICT skills, level of education, professional experience, age and gender of both management and employees of organizations play a vital role in the adoption of ICT. Managers of organizations as well as CEOs of private organizations are the people who influence the successful implementation of ICT adoption (Budhiraja, 2005; Raymond and Magnenat-Thalmann, 1982). Those top managers are the one who make critical decisions, including ICT adoption, and control the organizations and its finances. In the private sector innovative CEOs significantly influence ICT adoption (Malay, 2000; Rashid and Al-Qirim, 2001). Therefore, in order for any organization to adopt ICT successfully its top management must have knowledge of ICT Skills as well as identifying appropriate ICT goals and objectives (Manueli et. al., 2007).

ICT skills play a vital role in ICT adoption. Therefore, governments invest in training of officials in ICT skills to boost their productivity (Gray, 2006). Gray (2006) further asserted that government officials who have technical and vocational background are likely to perform better than their counterparts and are more innovative and creative hence, they enhance ICT adoption. Likewise, the level of education and higher qualifications are incentive to growth and development of education as well as enhancing ICT adoption. Gaskill et. al., (1993) and Allison (1999) posit that knowledgeable and skilled workforce is a key to successful of implementation of ICT in any organization. They further asserted that such a skilled workforce is likely to increased competitiveness and sustained growth in productivity.

Age and gender are personal factors that influence ICT adoption. Literature review has shown that younger people are more likely to cope with technology than elderly people both in business as well as in government (Beckinsale and Ram 2006). This is because young people are more exposed to technology both in schools and in their daily life. Age and experience greatly influence ICT adoption as revealed by researchers (Manueli et. al. 2007; Windrum and de Berranger, 2002). Some studies revealed the significant influence of gender on the adoption of ICT. Venkatesh et. al. (2000) reported that men are highly interested to use technology than women. Furthermore, technology acceptance in research has been dominated by males than females (Morris et. al., (2005) however females are beginning to join in the acceptance and use of ICT. In the field of education Basri et. al., (2018) found that females adopted ICT more than their counterparts in the same institutions.

3.2. Organizational factors affecting ICT adoption by educational institutions

Organizational factors such as quality systems, information intensity, specialization, management support, voluntariness, and organizational readiness enhance the adoption of ICT by educational institutions. Ahmed et. al. (2017) examined organizational factors such as organizational competence and ICT infrastructure among other factors and found that they are important drivers in ICT adoption preceded by technological factors. They recommended that Higher Education Institutions (HEIs) should re-strengthen organizational factors given their central role in driving ICT adoption process. HEIs should pay serious attention to both technological factors by clearly communicating the relative advantage and ease of use features of adopting ICT in the learning environment. They should also re-strengthen organizational factors given their central role in driving ICT adoption. These institutions should revise their policies and strategies with the aim of offering concrete support not merely lip service.

In the field of education information is very intense and vital for both the smooth running and provision of services in educational institutions. ICT is used in schools to collect and analyse student's data (Venezky and Cassandra, 2002). Teachers use ICT to keep student's records electronically which made it easier in formulating clear targets and better reporting to the parents of the students (Venezky and Cassandra, 2002). In the 1980s and 1990s bilateral assistance agencies and international Banks emphasized the use of ICT to collect educational data and to improve the administration of educational systems in developing countries through decentralization of the management of education in various countries (OECD, 2001).

Some of the ICT systems used in educational institutions, specially schools are compulsory though users sometimes use them voluntarily. Moore and Benbasat (1991) claimed that behaviors are directed more by perception of voluntariness than by actual voluntariness because users may feel some pressure to adopt ICT even when they are obliged to do so. Venkatesh et. al., (2003) claim that authors have treated voluntariness as binary while others consider it as a continuous variable in ICT adoption.

Top management support facilitate and accelerate the adoption of ICT in an organization. Provision of funding in an organization is crucial in delivering better services to citizens (Okoye, 2005). Funding facilitate goal achievements by providing the work requirements, including technology, and the employees with their needs. If funding is insufficient or not available in a given project then the chances of its success will be dim specially when such a project is new like technology and requires training (Sherry, 2003). Bingimlas (2009) pointed out that lack of resources, specially financial resources, as one of the major factors that hinders ICT integration in schools by teachers and more possibly by administrators both in schools and the Ministry of education. Kipsoi, Chang'ach, & Sang, 2012 found that high levels of poverty that hinder access to ICT facilities in Kenya. He further stated that lack of budget for ICT and economic crisis among others are challenges to ICT integration in schools.

Mingaine, 2013 explored the challenges of ICT implementation in schools in Kenya and the results revealed that high cost of infrastructure impede ICT implementation. Hennessy (2010) observes that "one of the greatest challenges in ICT implementation in schools is balancing educational goals with economic realities". The major hindrance to ICT implementation in schools in Africa is lack of physical educational facilities such as buildings (Hennessy, 2010). The resources available to equip schools with ICT infrastructure are limited therefore, it is a barrier in the implementation of ICT to support the delivery of curriculum in schools. This can also be said by extension about educational services delivery in all educational institutions.

3.3. Technological context of ICT adoption by educational institutions

Choice of ICT equipment by institutions must be compatible with its values, objectives and work processes. For example, in business health related SMEs the technology chosen must be compatible with work practices, values, needs and experiences of the user and this is considered as a critical determining factor in deciding usage and adoption of ICT (Rogers, 1995). Rashid and Al-Qirim (2001) and Tao and Tan (2002) claim that if ICT systems are not compatible with work procedures, value systems, and infrastructure then this will negatively affect the perception of the users and hence they may resist the change as well as ICT adoption.

Compatibility may positively influence behavioral intention through performance expectancy and effort expectancy as well. Compatibility of tele-medicine technology has significant influence on its perceived usefulness by its users (Chau and Hu, 2002). Therefore, it is evident that compatibility affects directly the adoption of ICT by end users who see that technology help them to do their work properly.

Relative advantage is one of the factors that influence ICT adoption in organizations. Poon and Swatman (1999), Rashid and Al-Qirim (2001), and Seyal and Rahman (2003) claim that the good perception of the benefits of ICT is expected to enhance the adoption of ICT. The degree of the benefits/ relative advantage is measured by high gains; less cost; storage, swift access to and dissemination of information and improvement of services delivery to customers (Poon and Swatman, 1999, Rashid and Al-Qirim, 2001 and Seyal and Rahman, 2003).

In enterprises or organizations in general the resources such as finance, human and technological (computers, telephone lines or mobiles, and internet) play a vital role in the adoption of new innovations, specially ICT (Thong, 1999). Thong (1999) argued that

lack of resources and expertise are the source of not adopting ICT in small businesses. Government institutions, educational institutions in particular, often do not have sufficient resources in order to facilitate the adoption of new technologies. This seems to be an acute problem in the developing countries and in Africa as well (Hennessy, 2010).

The cost of telecommunication as well as their availability determines the extent to which ICTs are used in a country however, the costs are mostly higher in developing countries. Telecommunication services price impact the spread of internet technologies negatively because internet data are transmitted through telephone (Kiiski and Pohjola, 2001 and Rashid and Al-Qirim, 2001). Besides the cost of telecommunication services there is an added cost of maintenance of ICT equipment which is not usually provided in government institutions.

The technology should be trusted specially if it deals with sensitive issues such as transactions, securing systems, and maintaining relationships hence influencing the decision of top management in adoption of ICT. Trust can lead into positive networking with other businesses, government, and customers (Haynes et. al., 1998). In addition, trust between individuals in an organization is a very significant factor (Times, 2000 and Simpson, 2002). The usage of trusted technologies can help educational institutions to deliver better educational services to citizens effectively.

3.4. External environmental factors affecting ICT adoption by educational institutions

External environment greatly influences the decision of ICT adoption by any organization whether public or private. The factors which constitute external environment include competition pressure, infrastructure, policy, and national culture. Competition pressure is mainly attributed to the private sector and there are conflicting views about its effect on ICT adoption; Cragg and King (1993) and Iacovou et. al., (1995) supporting its effect while Thong, (1999) refuted its effect on ICT adoption. It is not clear if public organizations, especially schools, do compete in certain areas and hence adopt ICT to assist them. This issue requires an investigation.

Most African countries are extending and expanding their telecommunication systems however, poor infrastructure hinders the countries to participate effectively in information society age (Mansell and When, 1998) this is due to two factors: one lack of financial resources and limited investment opportunities to develop the infrastructure. Although the infrastructure is poor the internet is growing very fast in those countries.

Angigan (1999) and Kapuruandara et al., (2004) cited that lack of telecommunication infrastructure includes poor internet connectivity, lack of fixed telephone lines for end user dial-up access, and the undeveloped state of the internet providers. Tele-density in Africa is still very poor compared to the rest of the world where there is one telephone lines for 100 people while in the rest of the world there are 13 lines for 100 persons (Evusa, 2005, Wicander and Sunder, 2006). Despite all the constraints some African countries are extending and modernizing their telecommunication networks however, their rural areas which host more than 70 % of the population are yet to be covered (Ochara et al., 2008).

The national culture of a given country plays a great role in deciding to adopt ICT in organizations. Hodas (1993) claim that cultural factors create negative attitudes towards computers. The reason is that it is assumed the computers will make the life of people more mechanized therefore employees resist accepting them in their work. According to Straub (1994) most ICT projects are frustrated by national cultures because those who are in charge of deciding transfer technology and ICT adoption they lack the knowledge of importers' cultural tradition as well as the nature of the technology being transferred. He also asserted that It is likely that incompatibility between the culture and the technology may happen if the latter is imported to developing countries without the understanding of the national culture.

Silverstone and Haddon (1996) and Straub et al., (1997) argue that each and every employee lives and works in a cultural environment where particular values, norms, attitudes, and practices are dominant which are also part of socialization and culture. Therefore, that given environment is likely to influence the decision to adopt ICT. Some researchers pointed out that one of the major challenges facing developing countries is to integrate technology into their cultures (Hofstede (1997) and Martinez (1999)). In addition, ICT adoption decisions are mostly made by individuals in organizations in the national context of countries (Myers and Tan, (2002), Bagchi et al., (2003) and Getao and Wausi (2005). Furthermore, significant variation in Internet diffusion and IT acceptance and implementation among countries can largely be due to their national cultures (Erumban and Jong, 2006).

4. Conclusion

Services delivery are the responsibility of governments especially educational services. The adoption of ICT by educational institutions to improved educational services delivery is considered to be one of the solutions to the challenges of education in developing countries. The review was sought to establish the determinants of ICT adoption by educational by educational institutions. The generic determinants of ICT adoption by educational institutions includes personal characteristics; organizational factors; technological factors; and environmental context. Although, some authors gave different views about the most effective factors, most of them agreed on the management/ administrative support, financial resources, infrastructure, compatibility of systems,

national culture, and government policy as influential factors of ICT adoption. Those factors affect ICT adoption positively if they are available and negatively if they are lacking.

The review clearly identified the determinants of ICT adoption however, it was not clear to what extent have the educational institutions adopted ICT in the African context. The author recommends this issue to be investigated further especially in the context of East Africa region.

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