

INSTITUTIONAL FACTORS INFLUENCING ICT INTEGRATION IN PUBLIC SECONDARY SCHOOLS IN WAJIR COUNTY KENYA

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Abstract: The general objective of this research was to examine the institutional factors influencing ICT integration in public secondary schools in Wajir County. The study specific objectives included; to determine the influence of financial resources; institution facilities; teachers training and the influence of teaching and learning resources on ICT integration in public secondary schools in Wajir County. The study adopted a descriptive research design and the study population comprised of 340 board members and teachers from 17 public secondary schools in Wajir County. The study applied a stratified random sampling technique to select a total of 102 (30%) teachers' respondents as the sample size. The main data collection instruments were the questionnaires containing both open ended and close ended questions with the quantitative section of the instrument utilizing both a nominal and a Likert-type scale format. Descriptive statistics data analysis method was applied to analyze data aided by Statistical Package for Social Sciences (SPSS) to compute responses frequencies, percentage mean and standard deviation results. The study found out that institutional factors notably; financial resources; institution facilities; teachers training and teaching and learning resources were the major institutional factors that influenced ICT integration in public secondary schools in Wajir County. The study recommends that the government through the ministry of education should provide more financial resources to the public secondary schools in Wajir County. The school management should also implement effective financial management and procurement management strategies to ensure accountability and transparency in utilization of funds on ICT integration activities.

1. INTRODUCTION

Background to the Study

Worldwide, following various innovations in the ICT industry and the recognition of the importance of ICT in education sector, the demand for ICT integration in the curriculum has become a global concern and of great significance towards achieving the Millennium Development Goals (MDGs) and Education for All (EFA) goals. Both developed and developing countries are hence putting extra efforts to integrate ICT in classroom interactions and management of information systems (Smith, 2007). For ICT to be effectively integrated in schools, just like any other organization institutional factors such as financial resources; institution facilities; trained personnel; ICT policies and teaching and learning resources should be made available (UNESCO, 2009).

In Europe, ICT integration in education has been prioritized as a vital tool for pedagogical innovation and knowledge transformation across the curriculum (UNESCO, 2009). In Bangladesh, teachers have been slow to adopt and use ICT in teaching due to challenges related to lack of time for lesson preparation, teachers' negative attitudes towards ICT and corruption at the managerial level of education sector. In Germany, ICT integration in pedagogy was not fully adopted in schools because of inadequate trained teachers on ICT integration in subject-related technology. The teachers have

positive self-efficacy to use technology but have little knowledge on new pedagogical approaches that differ from traditional methods of teaching (OECD, 2014).

In Kenya, ICT integration in teaching and learning was meant to transform the nation into knowledge-based economy. For viability of ICT integration strategies, the Government of Kenya established ESP to generate and to distribute digital content for public secondary school (Hennessy et al. 2010; Republic of Kenya, 2013). At the same time, the National ICT Innovation and Integration Centre were set up in order to carry out technical support on ICT infrastructure (Republic of Kenya, 2014). The government has also come up with Kenya National ICT Policy (2006) and the Kenya National ICT Master Plan 2013/14 – 2017/18 to guide educational stakeholders in the introduction of ICT infrastructure in public secondary schools countrywide. The ICT project was aimed at equipping a selected number of schools with ICT infrastructure. The ICT for Education (ICT4E) was also established to guide teachers ICT integration in daily classroom practices (Republic of Kenya, 2013).

Statement of the Problem

Following the promulgation of new constitution in the year 2010, the Kenya education system is undergoing major reforms to align itself with Vision 2030 and the new Constitution. One of the major reforms is ICT integration in schools since integration of ICT in secondary schools plays a significant role in facilitating effective execution of schools administration functions and delivery of quality learning services (ROK, 2012). According to the Kenya Ministry of Education Task Force (2012) only about 2% of schools in the country had the necessary ICT infrastructure. Over 70% of schools in the country were found to lack supportive institutional facilities for ICT implementation. The task force recommended that ICT institutional framework to be strengthened to allow efficient integration of ICT in the entire education sector with enhanced ICT capacity at all levels and for the establishment of a National Centre for ICT Integration in Education (NACICTIE) and be devolved to counties. It also called for the provision of technical backup in ICT initiatives in government learning educational institutions (ROK, 2012). The Government of Kenya has therefore invested considerable resources in ICT education by supplying secondary schools with ICT facilities and training of teachers on ICT integration in the curriculum. In the year 2011, the MOEST provided ICT facilities to over 1,500 secondary schools and in addition over 1,600 teachers were trained on ICT integration in teaching-learning (Mbithe, 2016). Despite the measures put in place by the government to enhance effective integration of ICT in secondary schools in Kenya. Many secondary schools in Wajir County still lags behind in ICT integration. In Wajir County, integration of ICT is mostly constrained by institutional factors. In Wajir County out of the 17 public secondary schools, only 17% of the schools had integrated ICT in school administration and teaching activities (Hassan, 2014). Over 50% of schools in Wajir County lacks trained teaching staff on ICT application and institutional facilities for ICT integration. There is therefore a need to improve on institutional factors in order to facilitate integration of ICT in schools. Previously, studies undertaken on ICT integration and institutional factors have addressed different issues (Uwezo Kenya, 2012). It is therefore in light of this back ground that this study aims to fill the evident knowledge gap in literature by examining the institutional factors influencing ICT integration in public secondary schools in Wajir County.

Objectives of the study

The study will pursued the following specific objectives:

1. To determine the influence of financial resources on ICT integration in public secondary schools in Wajir County.
2. To establish the influence of institution facilities on ICT integration in public secondary schools in Wajir County.
3. To assess the influence of teachers training on ICT integration in public secondary schools in Wajir County.
4. To find out the influence of teaching and learning resources on ICT integration in public secondary schools in Wajir County.

2. LITERATURE REVIEW

Empirical Review

ICT is the use of electronic equipment and other accessories like computer hardware and software and other telecommunication equipment to acquire, store, process and disseminate information. A number of studies have been

conducted on institutional factors and ICT integration in different organizations and in schools, this section reviews some of the related studies on institutional factors influencing ICT integration in public secondary schools.

Financial Resources: Siddiqui (2007) observed that developed countries have advanced in equipping schools with ICT infrastructure; it is not the case with schools in developing countries since they lack adequate financial resources. A research which was done in the United States of America showed that 92% of people under the age of 60 have used computers and 72% have used the internet. Between 1994 and 2000, the proportion of public schools connected to the internet increased from 35% to 98%. Developing countries are unable to afford large-scale national school computerization programs without increasing educational budgets. Most Latin American governments spend relatively little of their education budgets on educational technology. Internet access and cost issues for education are high in most Latin American countries.

Institutional Facilities: According to Mohammed and Rashid (2011) institution facilities are key institutional structures that determine how organizations adopt ICT based systems. Mohammed and Rashid (2011) argued that existence of modern and current institutional facilities in developed countries is one of the key factors that help in application of ICT based systems in many organizations. In learning institutions setting such as secondary schools existence of well-equipped computer labs, ICT infrastructure and security systems affects implementation of ICT in many schools in Africa. Many schools in developing countries not only lack adequate ICT infrastructure but also lack latest computer hardware and software. Technical and financial problems must be tackled for any ICT utilization program in schools to succeed. The researcher sought to find out whether schools are equipped with right type of ICT hardware and software (United Nations, 2014). Khan (2012) noted that weak institution ICT infrastructure is major challenge affecting the implementation of ICT in many schools in Kenya since many schools support facilities like well-equipped computer labs with internet and better computer hardware and softwares.

Teachers Training: The availability of trained teachers has been globally considered as a key strategy for advancement of the new technological innovation in the curriculum (OECD, 2004). Training teachers on ICT integration helps to provide them with competencies and skills of how to incorporate ICT tools in their respective subjects in the classroom environment (Gaible, Bloome, Schwartz, Hoppes and Vota, 2011). Sahlberg (2010) noted that deficiency of teacher development programmes in Finland influence integration of ICT in teaching and learning processes. In India, the use of Information and Communication Technologies (ICTs) is limited because of low number of adopters especially among female teachers.

However, Mwathi (2014) noted that Kenya is facing a significant shortage of trained teachers to implement ICT integration in the curriculum along with a challenge of inadequate ICT infrastructures in public secondary schools. Shazia, (2007) found that despite having few certificates in computer packages, few teachers were capable of using computers in their personal and professional work.

Teaching and Learning Resources: Tondeur (2007) observed that lack of better teaching and learning resources like lack of enough classes, qualified ICT teachers and lack of enough teaching and learning materials in many schools in Africa remote regions hinders integration of ICT in schools. Tondeur (2007) further argued that Africa government should first construct enough classrooms, train teachers on ICT and provide enough teaching and learning materials before embarking on ICT projects.

Siddiqui (2007) study noted that, many governments stand at the threshold of the 21st century without clearly defined plans and strategies about the use of educational technology. Schools should have an IT policy and a plan for its implementation. An IT school policy is a statement of beliefs, values and goals of using IT in the operations of a school. It should provide targets for the overall development of IT within the school.

3. RESEARCH METHODOLOGY

The study employed a descriptive research design. Descriptive research designs could be used in both quantitative and qualitative research projects Mugenda (2008). Descriptive research involves gathering data that describe events and then organizes, tabulates, depicts and describes that data collection (Kothari 2004). Orodho (2009) describes a descriptive research design as a systematic empirical inquiry in which the researcher does not have direct control of independent variables because their manifestation have already occurred or they are inherently not manipulable. The study hence

found the design appropriate since it used stratified random sampling technique to obtain information from few respondents in order to have a general view of the institutional factors influencing ICT integration in public secondary schools in Wajir County.

The target population was a total of population comprised of 17 public schools in the county. Being in a remote region, most school in the county are faced by various institutional challenges that affects integration of ICT in schools (Wajir County, 2017). The target population was divided into two sub-groups/stratas based on the two population categories notably; 170 schools board members and 170 teaching staff in all secondary schools. Simple random sampling was then be applied to select 30% of the respondents from each population subgroup/strata leading to a total of 102 respondents as the sample size for the study. Graham (2002) stipulates that a sample size of between 30 to 50 per cent of the target population supports gathering of unbiased data from the target population and assists in generalization of the research findings.

Data collection instruments were used in gathering empirical evidence in order to gain new insights about situations and answer questions that prompt the undertaking of the research (Cooper & Schindler, 2003). Multiple choice and Likert scale questions were provided where the respondents were asked to tick appropriate choices. The instrument was developed so as to contain all the items that aided in achieving the objectives of the research study. Questionnaires were preferred because according to Dempsey (2003) they are effective data collection instruments that allow respondents to give much of their opinions pertaining to the research problem.

4. CONCLUSIONS AND RECOMMENDATIONS

Summary of the Findings

Financial Resources

Findings from the study revealed that financial resources key institutional factor that influenced ICT integration in public secondary schools in Wajir County. Financial resources challenges in terms of lack of ICT funds allocation, inadequate ICT budget and few sources of funds hampered the ability of the schools management to procure and implement various ICT facilities required for supporting ICT integration in the learning process. This was supported by majority 31(50%) of the respondents who strongly agreed that ICT funds allocation affected ICT integration in public secondary schools; 24 (38.7%) and 32 (51.6%) of the respondents strongly agreed and agreed that ICT budget and sources of funds affected ICT integration in public secondary schools respectively. However, the study noted allocation of enough funds, provision of adequate ICT budget and availability of enough sources of funds could play a major role in supporting integration of ICT in many public secondary schools in Wajir County.

Institution Facilities

The study findings showed that institution facilities played an important role in integration of ICT in public secondary schools in Wajir County. Findings from the study revealed that institution facilities such as well-equipped computer laboratories; effective ICT infrastructure in terms of telecommunication and networking facilities and existence of effective school security system influenced ICT integration in public secondary schools. However, the study noted that most schools lacked well equipped computer laboratories, the ICT infrastructure was poor and the school security system was weak hence making it difficult for the schools management to integrate in most public secondary schools in Wajir County. This was expressed by majority 27(43.5%) of the respondents strongly agreed that equipped computer labs influenced ICT integration in public secondary schools; 28(45.2%) and 32 (51.6%) of the respondents strongly agreed and agreed that ICT infrastructure and school security system influenced ICT integration in public secondary schools respectively.

Teachers Training

The study found out that teachers training greatly influenced ICT integration in public secondary schools in Wajir County. It was noted that many schools lacked trained teachers on ICT application and thus most teachers were not qualified to teach computer classes. Most teachers were found to lack ICT competency and there were only few teachers qualified and available to teach ICT related courses in schools. These findings were supported by majority 31(50%) of the respondents strongly agreed that teachers qualification influenced ICT integration in public secondary schools; 28(45.2%) and 29

(46.8%) of the respondents strongly agreed that ICT competency and teachers availability influenced ICT integration in public secondary schools respectively.

Teaching and Learning Resources

Findings from the study revealed that lack of teaching and learning resources was major factor that hampered ICT integration in many public secondary schools in Wajir County. The study noted that the nature of classes in many schools was poor as the class rooms were poorly constructed and lacked electricity and there lacked many qualified teachers with the required ICT skills. It was also established that many schools lacked good quality teaching and learning materials on ICT and a big number of schools lacked teaching and learning materials. This was expressed by majority 30(48.4%) of the respondents strongly agreed that nature of classes influenced ICT integration in public secondary schools; 27(43.5%) and 31 (50%) of the respondents strongly agreed that enough ICT qualified teachers and enough teaching and learning materials influenced ICT integration in public secondary schools respectively.

ICT Integration

The study findings showed that the major factors that determined ICT integration in public secondary schools in Wajir County includes; better Learning methods; high level of ICT skills application in learning; computer literacy among the students and better learning ICT environment. This was expressed by majority 34(54.8%) of the respondents who strongly agreed that learning methods determined ICT integration in public secondary schools; 29(46.8%); strongly agreed ICT skills application; 32(51.6%); strongly agreed on computer literacy and 22 (35.5%) of the respondents strongly agreed that the quality of learning environment determined ICT integration in public secondary schools respectively.

Conclusions

Based on the study findings, the study drew conclusions that the major institutional factors influencing ICT integration in public secondary schools in Wajir County includes; financial resources; institution facilities; teachers training and teaching and learning resources. However, the it was concluded that institution facilities was the major factor that influences most ICT integration in public secondary schools with a coefficient of 0.664, the followed by teaching and learning resources with a coefficient of 223, then financial resources with a coefficient of 0.075 and lastly teachers training with a coefficient of 0.029.

Most public secondary schools lacked adequate financial resources and thus experienced financial resources challenges in terms of lack of ICT funds allocation, inadequate ICT budget and had only few sources of funds. This hampered the ability of the schools management to purchase and implement various ICT facilities for supporting ICT integration in schools. It can therefore be concluded that financial resources challenges in terms of lack of ICT funds allocation, inadequate ICT budget and few sources of funds hampers ICT integration in many public secondary schools in Wajir County.

The study also concluded that many schools lacked good institution facilities for supporting integration of ICT in many public secondary schools in Wajir County. Most of the schools institution facilities like lack of well-equipped computer laboratories, existence of poor ICT infrastructure and weak school security system negatively the schools management to integrate in most public secondary schools in Wajir County.

The study also concluded that the level of teachers training greatly influenced ICT integration in public secondary schools in Wajir County. Lack of professionally trained teachers on ICT application, and existence of only few teachers qualified and available to teach ICT related courses in schools negatively influenced ICT integration in public secondary schools respectively. It was further concluded that lack of teaching and learning resources in terms of poorly constructed class rooms, lack of qualified teachers on ICT application and lack of ICT teaching and learning materials hampered ICT integration in many public secondary schools in Wajir County. Finally the study concluded that ICT integration in public secondary schools in Wajir County includes is determined by better learning methods; high level of ICT skills application in learning; computer literacy among the students and better learning ICT environment.

Recommendations

The study suggested the following recommendations as a measure to improve on ICT integration in public secondary schools in Wajir County.

The county government and the ministry of education should provide more financial resources to the public secondary schools in Wajir County. The school management should also implement effective financial management and procurement management strategies to ensure accountability and transparency in utilization of funds on ICT integration activities. The ICT budget should be increased and alternative sources of funds like from donors and other stakeholders should be sought to fill on the ICT budget deficit.

The government and the school management should provide good institution facilities for supporting integration of ICT in public secondary schools in Wajir County. The county government and the ministry of education should provide well-equipped computer laboratories, effective ICT infrastructure and implement strategies to improve on the school security system

The government should provide professionally trained teachers on ICT application in all secondary schools in the county. Continuous training should be provided to available teachers by the ministry of education on emerging trends on ICT integration in learning process in public secondary schools.

The government should provide enough teaching and learning resources to public secondary school in Wajir County. Enough and well-constructed class rooms should be made available and more qualified teachers on ICT application should be made available in all public secondary schools. The government should also provide enough and quality ICT teaching and learning materials to crease supportive environment for the ICT integration in learning in public secondary schools in the County.

REFERENCES

- [1] Abdi,H. (2009). Procurement and project implementation. *Management Journal*, 22(9): 12-14.
- [2] Adams,O.(2008).Contractor development in Nigeria: perceptions of contractors and professionals,” *Construction Management and Economics*, 15(1): 95–108
- [3] Alazwa,P (2010) Public Projects Reforms. *Project Management Journal*, 44(23): 55-76.
- [4] Bartik, W.(2009). Institutional capacity challenges. *Journal of Strategic Management*, 29(3): 51-71.
- [5] Boyne,T and Walker,P. (2008). Project implementation process. *Strategic Management Journal*, 26 (8)
- [6] Dickinson,E. (2010). Institutional Challenges and ICT Implementation. *Project Management Journal*, 12(11): 13-21.
- [7] Brown and Hyer (2010). Project implementation process. *Strategic Management Journal*, 26(8)
- [8] Chan, P. C. (2007). Time cost relationship of public sector projects in Malaysia, *International Journal of Project Management*, 19:223-229
- [9] Chandra,P. (2008). *Projects: Planning, Analysis, Review*. (6th ed.). New Jersey. Pearson
- [10] Chilipunde,R.L (2010). Constraints and challenges faced by small, medium and micro enterprise contractors in Malawi [M.S. thesis], *Nelson Mandela Metropolitan University, Port Elizabeth, South Africa*.
- [11] Cook.P.(2003) “Financing small and medium-scale contractors in developing countries: a Ghana case study,” *Construction Management and Economics*, 21(4):357 367
- [12] Cooper, D. R., & Schindler, P.S. (2003). *Business Research Methods*, (10th Ed.). McGraw-Hill Publishing, Co. Ltd. New Delhi – India.
- [13] Corsten,P. (2009) public procurement processes in developing nations. *Journal of Economics*, 34
- [14] Fugar, F,D.K. (2010). Delays in Building Construction in Ghana, *Australian Journal of Construction Economics and Building*, 10 (1/2):103-116.
- [15] Gaturu, & Muturi (2014) factors affecting the timeliness of completion of donor-funded projects in Kenya world agro forestry centre. *Journal of Project Management*
- [16] Githenya, M. S & Ngugi, K. (2014). Assessment of the Determinants of Implementation of Housing Projects in Kenya.
- [17] Hassan,O. (2014). ICT Implementation Challenges in Schools. *Strategic Management Journal*, 13(14): 12-31.

- [18] Hennessy,P., Harrison,E., & Wamakote,P. (2010). ICT Implementation in Schools. *Strategic Management Journal*, 12(11): 13-21.
- [19] Hoffman,R., & Sandelands,A. (2005). Factors affecting ICT Implementation in organizations. *Project Management Journal*, 12(11): 13-21.
- [20] Khan, S. H.(2012). Barriers to the Introduction of ICT into Education in Developing Countries: The example of Bangladesh. *International Journal of Instruction*. 5(2)
- [21] Hubbard,P. (2005) Factors constraining successful g project implementation in Himalayas by the Government of Nepal. *Journal of Project Management* , 22(7): 11-21.
- [22] Hyer,P. (2010). Public Projects Reforms. *Project Management Journal*, 44(23): 55-76.
- [23] Jaselskis,P.,& Ashley,N. (2007). Factors constraining successful building project implementation in South Africa,” *Construction Management and Economics*, 25(1):39–54, 2007.
- [24] Joppe, M. (2000). *The Research Process*. (2nd Edition). Pearson Publishers
- [25] Kagia (2014) Challenges facing project public projects implementation. *Project Management Journal*, 14(22): 56-71.
- [26] Kahura (2014) factors influencing effective and efficient delivery of road construction projects in Nairobi County. *Project Management Journal*, 21(24): 122-127.
- [27] Maki,P. (2008) ICT Integration Challenges. *Management Journal*, 10(12): 11-22.
- [28] Mantel,E. (2012). *Projects Management: A Managerial Approach*. (8th ed.). Singapore, John Wiley & Sons, Inc.
- [29] Meredith, R. (2002). *Projects Management: A Managerial Approach*. (8th ed.). Singapore, John Wiley & Sons, Inc.
- [30] Miles, S (2011). "Stakeholder Definitions: Profusion and Confusion".EIASM 1st interdisciplinary conference on stakeholder, resources and value creation, *IESE Business School, University of Navarra, Barcelona*.
- [31] Omanga,P. (2010) Road Projects in Constituencies . *Business Daily*
- [32] Onions, W. (2007). *A Knowledge Based Theory of Project Management*: McGraw-Hill, :61-72.
- [33] Orodho, C.R. (2009). *Elements of Education and Social Science Research Method*. (2nd Ed). New Delhi: Kanezja Publishers.
- [34] Otieno,D. (2012). Strategic Management practices in public sector organizations. *Journal of Management*, 36
- [35] Otieno,P (2010). Road constructions projects challenges. *Project Management Journal*, 34(6): 11-16.
- [36] Owen,E., & Valesky,T. (2011), Causes of construction delay: traditional contracts,” *International Journal of Project Management*, 20(1):67–73,
- [37] Republic of Kenya (2013). ICT Implementation in Schools. *Government Press*
- [38] Salhberg (2010) ICT integration in secondary schools. *Strategic Management Journal*, 42(21): 53-77.
- [39] UNESCO, (2009). ICT integration schools. *United Nations Report*
- [40] Uwezo Kenya (2012). ICT Implementation in Schools in Kenya. *Uwezo Survey Report*
- [41] Wajir County (2017). Secondary Schools in Wajir County. *Wajir County Report*
- [42] Walker,T., and Vines,R. (2008). Project Management challenges. *International Journal of Project Management*, 10(3):80-102
- [43] Warui,W. (2015). Project Planning, *Journal of Project Management*, 17(9):100-109
- [44] Waweru,P. (2008). factors affecting the timeliness of completion of donor-funded projects in Kenya world agro forestry centre. *Journal of Project Management*. 9(11): 12-21.
- [45] Zinbarg,M.(2005). *Research Methods, (2nd Edition)*. Newjersy: Pearson Publishers