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| BUILDING IT IN AFRICA |
| IMPLEMENTATION OF ICT FOR EDUCATION (CLASSworks) PROGRAM IN KENYA.A CASE OF VIAFRICA FOUNDATION |
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 IBEM GRADUATION ASSIGNMENT

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## List of abbreviation

AVU- African virtual universities

BOG’s-Board of Governors

CLASSworks-Computer Learning and Support Sustainable works

DEB-District Education Board

DEO-District Education Officer

EFA- Education for All

EMIS –Education Management Information System

FPE- Free primary education

GESCI- Global E-schools and Community initiative

ICT- Information Communications and Technology

KCPE- Kenya Certificate of Primary Education

KCSE- Kenya Certificate of Secondary Education

MDGs- Millennium Development Goals

MOEST- Ministry of Education Science and Technology

NEPAD-New Partnership for Africa’s Development

NGOs- Non Governmental Organizations

PDE- Provincial Director of Education

PEO- provincial education Office

PTA- Parents Teachers Association

SMC- School Management Committee

UNESCO- United Nations Educational, Scientific and Cultural Organization

USAID- United States Agency for International Development

## Executive summary

The research project was commissioned to find out how Viafrica could sustainably implement ICT programs in Kenyan schools.

Viafrica foundation was established with the aim of stimulating development through ICT. The foundation provides ICT solutions to schools in Kenya, Tanzania and Sierra Leone. Viafrica has been in operation in Africa since 2003 and has managed to equip more than 170 schools through its CLASSworks program. The organization has experienced sales challenges in Kenya due to a more complex and competitive ICT market. Viafricas decision to specifically focus on equipping secondary schools with ICT provides the basis for this research. The objective of this research is to assist Viafrica reach 24 targeted schools per year and thus helping to Viafrica achieve increased revenues and social impact.

The various literatures on ICT education in Africa and Kenya reveal that there has been great progress in terms of policy development and support. Despite the efforts countries still face a myriad of constraints which have seen many projects fail.

The findings shows that level of ICT integration and use largely depend on the type of school, location and infrastructure available. Private schools are far much ahead in adopting ICT because they manage their own finances. Public schools at the national level are also highly integrated. Poor rural schools on the other hand face the greatest threat of being left out of the digital world. Lack of ICT skills among teachers, lack of relevant content, total cost of ownership and principles attitudes towards ICT are some of the factors hindering ICT implementation.

Viafrica being a social enterprise should ensure that it is driven by its social mission. Other research outcomes indicate that management and decision making on ICT are determined at the school level and ensuring that principals develop knowledge and skills is critical for success. Teacher training and partnerships should also be considered strongly.

The paper concludes by giving recommendations to Viafrica. These include, focusing on achieving both financial and social impact by choosing the right target group, strengthening of its customer networks, working with other local partners, investing more on marketing, and strengthening their training programs.

**Table of contents**

[List of abbreviation 3](#_Toc332631146)

[Executive summary 4](#_Toc332631147)

[1 CHAPTER 1: INTRODUCTION 7](#_Toc332631148)

[1.1 Problem statement 7](#_Toc332631149)

[1.1.1 Background information 7](#_Toc332631150)

[1.1.2 Viafrica foundation 9](#_Toc332631151)

[1.1.3 The CLASSworks concept 10](#_Toc332631152)

[1.1.4 Organizational structure 10](#_Toc332631153)

[1.1.5 Justification of the topic 11](#_Toc332631154)

[1.2 Research objectives 11](#_Toc332631155)

[1.2.1 Sub- questions 11](#_Toc332631156)

[2 CHAPTER 2: LITERATURE REVIEW 12](#_Toc332631157)

[2.1 Adoption of ICT for education in Africa 12](#_Toc332631158)

[2.2 ICT4E as a driver of development 14](#_Toc332631159)

[2.3 ICT for education in Kenya 15](#_Toc332631160)

[2.4 Kenya Educational system 16](#_Toc332631161)

[2.4.1 Pre- primary education 17](#_Toc332631162)

[2.4.2 Primary education 17](#_Toc332631163)

[2.4.3 Secondary education 17](#_Toc332631164)

[3 CHAPTER 3: METHODOLOGY 18](#_Toc332631165)

[3.1 Research methodology 18](#_Toc332631166)

[3.2 Data collection 18](#_Toc332631167)

[3.2.1 Secondary sources 18](#_Toc332631168)

[3.2.2 Primary sources 18](#_Toc332631169)

[4 CHAPTER 4: FINDINGS 20](#_Toc332631170)

[4.1 Secondary schools in Kenya 20](#_Toc332631171)

[Table 1 : Number of secondary schools by province 20](#_Toc332631172)

[Table 2: Categories of public secondary schools and their characteristics 21](#_Toc332631173)

[4.2 Level of ICT integration in Kenyan schools 21](#_Toc332631174)

[4.2.1 ICT support and funding 21](#_Toc332631175)

[4.3 ICT needs in secondary schools in Kenya 22](#_Toc332631176)

[4.3.1 Current use of ICT in schools 22](#_Toc332631177)

[4.3.2 Factors hindering use and integration of ICT into learning 23](#_Toc332631178)

[4.4 Management of secondary schools 25](#_Toc332631179)

[4.4.1 Ministry of education 25](#_Toc332631180)

[4.4.2 District Education Board (DEB) 25](#_Toc332631181)

[4.4.3 Board of governors, School Committees parents teachers association 25](#_Toc332631182)

[4.4.4 Head teachers 25](#_Toc332631183)

[4.5 SWOT ANALYSIS 26](#_Toc332631184)

[4.5.1 Strengths 26](#_Toc332631185)

[4.5.2 Weaknesses 26](#_Toc332631186)

[4.5.3 Opportunities 26](#_Toc332631187)

[4.5.4 Threats 26](#_Toc332631188)

[5 CHAPTER 5: DISCUSSIONS 27](#_Toc332631189)

[5.1 Balancing financial and social impact 27](#_Toc332631190)

[5.2 Management and decision making 28](#_Toc332631191)

[Figure 2: six buying roles model 28](#_Toc332631192)

[5.2.1 Six buying roles: Fredrick E.webster and Yoram Wind. 29](#_Toc332631193)

[5.2.2 Role of school administrator 29](#_Toc332631194)

[5.3 Training 29](#_Toc332631195)

[5.4 Total cost of ownership 30](#_Toc332631196)

[5.5 Partnerships and ICT implementation 30](#_Toc332631197)

[6 CHAPTER 6: CONCLUSION AND RECOMMENDATIONS 31](#_Toc332631198)

[6.1 Conclusion 31](#_Toc332631199)

[6.2 Recommendations 31](#_Toc332631200)

[6.2.1 Target group 31](#_Toc332631201)

[6.2.2 . ICT needs in schools 32](#_Toc332631202)

[6.2.3 . Partnerships 32](#_Toc332631203)

[6.2.4 Approaches to reach targeted number of schools 32](#_Toc332631204)

[References 34](#_Toc332631205)

[Appendices 36](#_Toc332631206)

[Appendix 1: country profile 36](#_Toc332631207)

[Appendix 2:GESCI system wide approach 37](#_Toc332631208)

[Appendix 3: Implementing agents and partners 38](#_Toc332631209)

[Appendix 4: Organisational structure 40](#_Toc332631210)

[Appendix 5: school networking value chain 41](#_Toc332631211)

**List of figures**

[Figure 1: Social venturing spectrum 27](#_Toc332618029)

[Figure 2: six buying roles model 28](#_Toc332618030)

**List of tables**

[Table 1 : Number of secondary schools by province 20](#_Toc332618043)

[Table 2: Categories of public secondary schools and their characteristics 21](#_Toc332618044)

# CHAPTER 1: INTRODUCTION

## Problem statement

### Background information

Having basic computer knowledge and skills is essential to economic development. Computer literacy is a key to getting almost everything in this globalised world. As Alvin Toffler a digital revolutionist simply puts it “the illiterate of the 21st century will not be those who cannot read and write but those who cannot learn, unlearn or re-learn. In its strategy 2002 paper on ICT, the World Bank states that “information and communication technologies are a key input for economic development and growth. They offer opportunities for global integration while retaining the identity of traditional societies. ICT can increase the economic and social wellbeing of the poor people and empower individuals and communities” ICT when applied in education prepares children for a better future in this knowledge based society.

UNESCOs Education for All initiative (EFA) has played a key role in harnessing the potential of ICT in education. The EFA framework recognizes that *‘technologies have great* *potential for knowledge dissemination, effective learning and the development of more efficient* *Educational services’[[1]](#footnote-1)*.Several range of programs and projects on ICTs in Education in Africa have activities that involve one or more African countries in varying numbers. These range from high-level intergovernmental, multi-stakeholder programs such as the NEPAD e-Schools, USAID, World Bank, and UNESCO to small organizations like Viafrica and African Virtual University (AVU),

The infodev knowledge Map findings indicate that there is widespread belief that ICTs can and will empower teachers and learners and that they can transform teaching and learning processes. ICTs must serve rather than drive the implementation of educational strategies. Technology is not the answer unless it reflects learners needs and suits the environment. The use of technologies cannot make up for poor pedagogy and content. Introducing technology will not change the teaching and learning process as it does not transform teacher practices in and of itself. However ICTs can enable teachers to transform their practices given a set of enabling conditions. Developing countries must use technology to respond to their own needs and not just follow the trends in developed countries[[2]](#footnote-2)

Although much have been said about how ICTs have great potential for knowledge dissemination, effective learning and the development of more efficient education services , low diffusion and use is still experienced in the developing world. This emanates from among others the fact that most of the projects originate from the outside and quite often, implementers don’t assess the needs and the local context before implementation. According to prof. Cronje who was recently named the top ICT educator in Africa, he argues that projects fail because they are built on condescending assumptions. He says interventions should be “asset-based otherwise we miss the indigenous strengths”[[3]](#footnote-3)

Working out how to use the technology to respond to the needs of poor countries requires an understanding of two key factors, first, how to implement the projects in a cost effective way and second, how to ensure it fits with the local needs and conditions. An understanding of these facts will lead to long term sustainability of the projects and increased social impact for the participating communities.

###  Viafrica foundation

 Viafrica is a non- governmental organization from the Netherlands founded by Joost Dam in 2003.It was his idea to stimulate development in Africa by focusing on use of ICT. Its mission, “stimulating development through the use of ICT” is the driving force of the foundation and the solutions offered are geared towards bridging the digital divide by promoting use of ICT in schools thus establishing a better fit between the education sector, the labour market and knowledge society.

Viafrica currently operates in Tanzania and Kenya through its local branches and in Sierra Leone through a franchise. The organisation has managed to equip computer labs in more than 170 schools since its establishment through its proven concept of CLASSworks.

Through its CLASSworks programme the organisation aims to generate high social impact while remaining sustainable in the long run. The organisation therefore seeks to know important issues in order to achieve its goals.[[4]](#footnote-4)

### The CLASSworks concept

CLASSworks is an ICT for development programme geared towards secondary schools. The programme which is partnership between a school and Viafrica begins by investments from both sides and continues through 3 year support contract period.

CLASSworks include hardware installation, teacher and administrator trainings and workshops, educational software, upgrades and content and e- waste management.

Viafrica believes that ICT can be harnessed to improve the quality of education in all subject areas and therefore encouraging schools to fully integrate their new computer facilities into class lessons is the objective of CLASSworks.

Viafricas’ objective is to equip 24 secondary schools with computers every year in Kenya. This objective is difficult though possible given the numerous challenges in developing countries ranging from poor infrastructure, power shortage and issues of funds. Implementing ICT projects will therefore require innovative and sustainable business models that focus on social impact and long term investment in the education sector.

### Organizational structure

Viafrica foundation has its head office in the Netherlands and two branches in Kenya and Tanzania. The foundation is headed by the general director and founder Joost Dam

 Together with Emmy Voltman and Laura Hinder, Joost forms the daily management of Viafrica Netherlands. They are accountable to the Viafrica board and also for strategies and partnerships from the Netherlands.

 Viafrica Tanzania and Viafrica Kenya are each headed by a director who is responsible for managing all operational activities in the respective countries. The strategy for both the ICT centres is determined together with the Dutch management team. The local branches are required to report to the head office.

Approximately 20 permanent staff members work in Kenya and Tanzania; the Dutch team consists of 25 volunteers and 3 paid employees.[[5]](#footnote-5)

 **See appendix for organizational chart.**

###  Justification of the topic

Following the success of Viafrica Tanzania, Viafrica opened another branch in Kenya (Kisii) in 2007 to expand the CLASSworks to Kenyan Secondary schools. It was the post election violence that forced them to move to Nairobi (Huruma area). Clients were hesitant to go to the centre because of security reasons and therefore a decision was made to move the office to the current location (Macheo Thika) which is also out of town.

The sales in Kenya are also difficult to achieve due to strict regulatory environment. An additional 25% tax is imposed on used hardware to prevent e-waste dumping .This effect combined with side cheap imports from Somalia, Middle East and United Arab Emirates (UAE), the market has gone from the official market to grey market where there is drastic fall in prices. The Kenyan ICT market is also more advanced compared to the other East African markets. Kenya is considered as the preferred destination for most investors thus there is increased competition.

Viafrica recognized that they had to use a different strategy for the Kenyan market so as to make ends meet. A decision was therefore reached to concentrate on ICT for schools in the mean time.

For successful implementation and social impact, the organization therefore sought to understand different issues which will be discussed in this paper.

The main question is: **how can Viafrica implement its CLASSworks program sustainably in Kenyan schools?**

##  Research objectives

 The main aim of the research was to achieve the following objectives:

* To assist Viafrica achieve increased revenues and achieve high social impact for schools.
* To meet the current needs for schools seeking to utilise technology
* To assist obtain the best approach to reach the maximum targeted number of schools
* To identify the most important partners Viafrica can collaborate with in implementing the CLASSworks programme.

### Sub- questions

In order to answer the main question and achieve the set goals, the following sub- questions were formulated:

1. Which type of schools is most favourable for the CLASSworks programme in terms of revenues?
2. Which type of schools is most favourable for the CLASSworks programme in terms of social impact?
3. Which ICT needs do schools have that are considering to utilize ICT technology?
4. What is the best approach that Viafrica can use to reach the targeted schools?
5. Which partners are important for reaching the set goals for the CLASSworks programme?

These questions will be answered in the subsequent chapters of the report.

# CHAPTER 2: LITERATURE REVIEW

##  Adoption of ICT for education in Africa

 “Every student needs a grandparent to link them to the past and a PC to take them into the future.” (UK01, Greenfield)

African nations like other developing countries still face a myriad of constraints in using ICT for education and development. Said Assar et al in an article, *information technology for development*, states that, there is lack of capacity in third world countries in general to build, maintain and utilize ICT to address educational needs. Lack of ICT policy, poor ICT project management and corruption are some of the constraints. This difficulty in the integration of ICT in education has led to ineffective implementation, adoption of different systems and standards, duplication of effort and waste of technology resources[[6]](#footnote-6). Several researchers argue that the development of effective ICT programs in education depends on a complex network of other social and economic factors that restrains developing countries from utilising ICTs.Van Reijswoud (2009) argues that ICT projects in developing countries become successful when adapted to local conditions. Educational effectiveness of ICTs in underserved countries will depend on several variables including appropriate design of software and hardware, and also the training and attitude of instructors

 The process of adoption of ICT in Africa is in transition and there appears to a be marked shift from a decade of experimentation in the form of donor-supported NGO- led small scale pilot projects towards a new phase of systemic integration by national government policies and multi- stakeholder- led implementation processes.

Governments are giving priority to policy developments in this area. Many African countries have a national policy either in place or under development. These policies define goals and implementation strategies for ICT in the education sector .Thus the new phase of ICT for education in Africa is occurring within national and emerging regional policy frameworks that are providing the basis for partnerships and donor participation[[7]](#footnote-7).

African Ministries of Education have begun to be more proactive in co-ordinating and leading the development of ICT infrastructure in school systems as their ICT policies and

Implementation plans have taken shape. However, civil society, principally NGOs working with donor agencies, continue to play a major role in providing computers to schools and lobbying governments to take a leading role. That said, their efforts have been frustrated by the lack of connectivity, inconsistent electrical supply, and lack of technical support services particularly in rural areas. The ICT policies place a great deal of emphasis on providing ICT infrastructure to secondary schools and, eventually, to primary schools as well. But implementing these policies and plans will require time and major infusions of resources.

According to infodev report (2007) “*survey of ICT and education in Africa*” several macro trends are coming up enabling implementation of ICT in National Education system. For example multi- partnerships that involve private companies, government ministries, educational institutions, donor and development agencies and civil society organisations. These institutions work together to garner resources and set priorities for ICT in education projects.

##  ICT4E as a driver of development

Ban Ki- moon in recent times said “Information and communication technology have a central role to play in the quest for development, dignity, and peace[[8]](#footnote-8). The international consensus on this point is clear. We saw it at the Millennium Summit in 2000 and at the 2005 World Summit and we saw it at the two phases of the World Summit of Information Society.” ICT in education could provide real solutions offering at the same time a chance to improve the development rates of poor societies in an extended time scale.

In 2000, the international development community adopted the Millennium Development Goals (MDGs) that aim to eliminate global poverty, hunger and inequality by 2015. Education receives special attention in MDG2, which focuses on enhancing primary Education in terms of quality and access; in MDG3, which focuses on women’s access to Education; and in MDG8, which seeks to promote collaboration and develop a skilled Workforce. In addition, the Education for All (EFA) principles developed by UNESCO provides a more specific set of objectives for the education sector. Information and Communication Technologies (ICTs) can be used to achieve the MDGs and the EFA principles as they can enhance the quality of education across the board at primary, secondary and tertiary level and also to support teacher training.[[9]](#footnote-9)

##  ICT for education in Kenya

 Kenya has made a remarkable progress in putting in place an ICT policy framework and implementation strategy. Having basic computer knowledge and skills is becoming a key to economic development. The demand for computer literate people is growing so fast. Government sectors, hospitals and private sectors are currently becoming increasingly computerised. For this reason the ministry of education in Kenya have required computer lessons be taught in secondary schools. Unfortunately a large percentage of secondary schools are unprepared to build and maintain computer labs, much less instruct computer lessons, due to lack of necessary equipment, knowledge and support. Again universal implementation is quite challenging given the lack of resources, national ICT infrastructure and also inadequate or lack of electricity supply especially in the rural areas.

Kenya promulgated a National ICT policy in 2006 that aims to “improve the livelihoods of Kenyans by ensuring the availability of accessible, efficient, reliable and affordable ICT services. The information technology addresses objectives and strategies pertaining to ICT and education it states in part that government will encourage “…the use of ICT in schools, colleges, universities and other educational institutions in the country so as to improve the quality of teaching and learning.” The related strategies, under the heading “E-Learning,” are to:

• Promote the development of e-learning resources.

• Facilitate public-private partnerships to mobilise resources in order to support e-learning initiatives, among others.

In the ICT for education paper (2005), the government of Kenya under the Ministry of Education Science and Technology (MOEST) discusses the ways in which ICTs can be leveraged to support and improve the delivery of quality education for all Kenyans. It recognises that by driving education rather than technology at the fore front, ICT could improve educational outcomes.

Various initiatives by the government, civil society, donors and private sector have been undertaken although it is difficult to measure the impact so far. Initiatives for instance Computer for schools Kenya, NEPAD e- schools are key interventions to promote ICT in schools.

Many institutions in Kenya are already utilising ICTs in education to address access, equity, and quality of education through the implementation of various projects. With greater coordination, these projects can provide valuable lessons to meet Government of Kenya (GOK’s) goal of Education for All. GOK has already identified ICT as a critical tool for creating greater enthusiasm for learning amongst students and offering access to a wider range of courses. GOK is keen to use education institutions as hubs of ICT dissemination in rural areas.

According to the sessional paper NO.1 of 2005 “a policy for Education, training and research” the overall goal is to achieve EFA goals by 2015 in line with national and international commitments. The policy provides commitment to ensure that learning needs for all are met through appropriate learning and lifelong skills by 2015.In order to realize these objectives, commitment is made to integrate ICTs in the delivery of the education curricula and to promote effective and efficient administration at all levels of education.[[10]](#footnote-10)

##  Kenya Educational system

Kenya has always placed education as a priority at all levels promoting it as a key indicator for social and economic development. It is committed to the education for all (EFA) goals of the provision of quality education for all school going age population. The main goals include enhancing access to and quality at all levels of education.

 The country follows an 8.4.4 system of education which features a broadly practical curriculum at all levels and consists of eight years in primary, four years in secondary and a minimum of four years at the university. The country has achieved a significant improvement in the education since independence with enrolment rate increasing year by year. The government introduced universal free non- compulsory access to primary education in 2003 that led to an immediate increase of 1.3 million students. This growth has created an accumulating demand for access to secondary and tertiary education as well[[11]](#footnote-11).

### Pre- primary education

Children between 3-6 years are required to attend pre-primary school for at least two years. The main objective is to cater for the total development of a child. It is provide through partnership with the government, local communities and private sector.[[12]](#footnote-12)

###  Primary education

The objective is to prepare students to participate in the social, political and economic being of the country (education info centre 2006). It serves pupils between 6- 14 years. In 2003 the government introduced free and compulsory primary education. The introduction of ( FPE) has resulted in a dramatic increase in private schools due to decline in quality of education and scarce resources.. Private schools target families who can afford to pay school fees for their children.[[13]](#footnote-13)

At the end of eight years, pupils do a national exam (KCPE) and the results are used to determine placement at the secondary school on a merit basis.

###  Secondary education

They fall into two categories: Public and private schools. Public schools are funded by the government and local communities are managed through board of governors and parents teachers Associations. Private schools are established and managed by private individuals, churches NGOs, etc. students get selected in order of their scores with the highest attending National and lowest district schools. Secondary school education is aimed at meeting the needs of the students who terminate their education after secondary education (education info centre, 2006)

# CHAPTER 3: METHODOLOGY

##  Research methodology

Desk research was applied extensively in this paper. Both internal and external research was conducted. These were a great source of expert knowledge in areas of ICT and education in Africa and Kenya which the researcher had no knowledge about.

 Internal research involved going through implementation reports, school analysis reports, annual reports and other documents which were considered relevant for the study.

 External desk research involved using the internet and published books in the library to obtain useful information. Many sources were scrutinized and filtered in the library to obtain useful information. The sources included publications and journals, and various reports.

 This method was preferred since it is cheap and takes less time and also the fact that field study was not possible since the research was carried out in the Netherlands.

##  Data collection

 For this research data collection consisted of primary and secondary sources

###  Secondary sources

My entire research depended on secondary sources of data. Publications, books and articles were used.

Data obtained from internet sources were carefully selected to obtain relevant information. Although secondary sources are a cheaper way of getting information it has too many drawbacks. Some of the information was outdated and irrelevant, different sources also provided contradictory in formation it therefore took time in obtaining relevant information

###  Primary sources

 Frequent Skype meetings were also held with Viafrica director in Kenya. Earlier plans were to administer structured interviews to head teachers in Kenya but it was impossible because there was not time available

3.3. Limitations

ICT implementation in school is a complex issue being influenced by numerous factors at the macro- level (national and international level) and at the micro- level (school level). This research focused on secondary schools in Kenya, being the target group of Viafrica. The issues brought up are at the school level

There was limited use of primary source of data collection. Plans to interview head teachers were impossible due to unavoidable circumstances this was beyond researcher’s prevention.

 Many employees in the Netherlands had little knowledge about Kenya hence not very useful.

 As described earlier, online sources were majorly used and at times contradicting and outdated information was presented hence took time to find relevant information. This challenge was beyond researchers’ control

#  CHAPTER 4: FINDINGS

##  Secondary schools in Kenya

Secondary schools fall into two categories in Kenya: Public and private schools. Public schools constitute the largest proportion of schools in the country. They are funded by the government and local communities and are managed through board of governors and parents teachers association (PTA). Private schools on the other hand are owned by private entrepreneurs, companies, churches, trustees, and other recognised bodies.

### Table 1 : Number of secondary schools by province

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **province** | **2003** | **2004** | **2005** | **2006** | **2007** |
|  | **public** | **private** | **public** | **private** | **public** | **private** | **public** | **private** | **public** | **private** |
| **coast** | **143** | **43** | **142** | **43** | **144** | **43** | **145** | **43** | **177** | **103** |
| **central** | **661** | **65** | **683** | **65** | **683** | **8o** | **690** | **81** | **837** | **168** |
| **eastern** | **706** | **90** | **713** | **90** | **713** | **194** | **713** | **196** | **1111** | **168** |
| **Nairobi** | **48** | **47** | **48** | **47** | **48** | **47** | **47** | **47** | **55** | **283** |
| **R.valley** | **813** | **164** | **818** | **164** | **818** | **220** | **818** | **223** | **1178** | **376** |
| **western** | **453** | **17** | **453** | **18** | **453** | **52** | **453** | **52** | **642** | **46** |
| **Nyanza** | **737** | **62** | **740** | **62** | **740** | **75** | **741** | **75** | **1083** | **148** |
| **N.Eastern** | **22** | **0** | **25** | **2** | **25** | **15** | **28** | **0** | **44** | **13** |
| **subtotal** | **3583** | **488** | **3622** | **491** | **3624** | **715** | **3635** | **727** | **5127** | **1305** |
| **TOTAL** | **4071** | **4113** | **4339** | **4362** | **6432** |

Source: EMIS unit.MOE.Adapted [**http://www.kenyaschoolmagazine.com/images/345.htm**](http://www.kenyaschoolmagazine.com/images/345.htm)

### Table 2: Categories of public secondary schools and their characteristics

|  |  |  |  |
| --- | --- | --- | --- |
|  | **national** | **provincial** | **District schools** |
| **Number**  | Few ( 48 schools) | Majority | High majority |
| **location** | Urban/ semi urban | Majority semi urban-rural | Rural |
| **infrastructure** | Better  | Average | Poor |
| **Fees paid** |  Kshs.(50,000-60,000) per year | Kshs.(35000-50000) per year | Kshs.( 5000-10000) |
| **ICT integration** | High integration | Average  | Less integration |

 **Source: researchers’ compilation.**

##  Level of ICT integration in Kenyan schools

A report by the national council for science and technology (2010) indicated that computer use in Kenyan classrooms is still in its early phases [[14]](#footnote-14) attempts to measure or assess the extent of utilisation of ICT in secondary schools have been hampered by lack of empirical data. Although there is a national ICT curriculum including official examinations, majority of schools do not have access to computers.

There is an apparent difference between private and public schools and also between rural and urban schools in terms of infrastructure, funding and other factors that support ICT implementation. Private schools are better off compared to its counterparts. Rural schools face the highest risk of being left out of the digital age.

### ICT support and funding

 The government is making effort in promoting ICT for education, for instance in 2006, the government through MOE disbursed Kshs. 1.5 million Per school to 213 schools evenly distributed across the country for purchase of computers (25), printers (1) educational software, and sensitization of teachers. (Gesci 2009)

During 2009/2010 budget, the government allocated kshs. 1.3 billion For provision of digital computer labs in 210 constituencies (budget speech 2009)[[15]](#footnote-15). In 2010 it allocated another Kshs. 680 million for purchase of computers for schools. (Budget speech 2010).[[16]](#footnote-16) In the 2010 /2011 budget the government through ESP (Economic stimulus programme) allocated kshs. 980 million for equipping 1050 schools and so far 1021 schools have benefited. The government also allows schools to charge kshs.800 to 1000 for ICT support in schools.

Private schools are ahead in ICT because they have control over their own resources and they also use ICT to maintain competitive edge in the market because parents tend to associate the use of ICT with good academic performance

##  ICT needs in secondary schools in Kenya

###  Current use of ICT in schools

ICT in African context Kenya included is still used as the object of study hence acts as the end and not the means. This shows that the current aim of ICT schools is gaining knowledge and skills about ICT.

ICT is currently used to simplify work. Review of Viafricas analysis reports shows that computers are used by teachers to prepare exams and lesson plans while students use it mainly for typing, editing, printing and playing games; it’s also widely used for administrative purposes. An interview carried out by Viafrica Kenya director (Peter Gitau) during implementation showed that apart from school work, many students would use computers to play music, and communicating with others.

CFSK evaluation report shows that 79% of students use ICT for class work. (Typing, editing, printing and storing data)[[17]](#footnote-17).The report also shows that students (77%) use computers more than teachers (9%). This could be attributed to lack of ICT skills among many teachers and an already overloaded syllabus. This presents a challenge to both government and ICT implementers like Viafrica as it means ICT integration into learning is still a long process.

### Factors hindering use and integration of ICT into learning

####  Digital content

According to an evaluation by CFSK a high percentage of teachers do not use computers for their subjects because of lack of appropriate content. Therefore computers are used to teach computer studies as a subject in most cases[[18]](#footnote-18). There is also lack of access to that which is available. Digital content is barely used if it is not related to the curriculum. Most teachers give it a try if they perceive it as locally relevant and appropriate to their teaching practices. In an effort to promote the development of content that will address the educational need of schools, the ministry of education through KIE, have digitalised the educational content and is to be distributed to public secondary schools in Kenya.[[19]](#footnote-19)

#### Lack of ICT skills by teachers

Research as shown that teachers to less extent do not at all apply ICT in their professional practice especially in public schools due to lack of ICT skills .IT skills among teachers is very low. In a survey ‘*ICT capacities and capabilities in secondary schools in Kenya*, it was established that majority of ICT trained teachers were beginners with basic knowledge in use of Microsoft office. It was further reported that there is to a less extent use of ICT in the daily learning and instruction support.

#### Total cost of ownership.

 Vital Wave Consulting Group research shows that initial hardware investment represents less than 28% of the Total Cost of Ownership (TCO), over a five year period. It shows that while initial hardware cost is significant, teacher training and support costs are higher and recur throughout the five year period. They estimate that while the initial costs are only 26%, recurrent costs account for 61% of TCO. There is very little or no data on the costs of deploying computers in schools. School managers lack information that gives a clear picture of the true costs involved. This leads to unsustainability of ICT for schools projects.

#### Principals’ attitudes towards ICT introduction in schools

Principals in Kenya are the ministry of education administrators at the school level .A research conducted by ( Odero 2011) revealed that the principals acknowledge national ICT policy and the fact that ICT improves teaching and learning but what hinders implementation is lack of finance, computer illiterate teachers and few computers in schools[[20]](#footnote-20)

From Viafrica school analysis reports, it was found that principals were quite positive about ICT as it improves schools image, increases enrolment and motivates teachers and students in learning and teaching. However principals who have little or no knowledge about ICT do not have policies or priorities for ICT integration. Many principals have not been prepared as technology leaders therefore they struggle to develop necessary human and technical resources to achieve ICT outcomes in their schools (Flanagan 2003). At Viafrica, principals of all CLASSworks schools are invited for headmaster seminars every two months, this provides an opportunity for head teachers to learn from each other and adopt best practices for management and use of ICT in their schools.

In a survey *“success and challenges in integration in Kenya*” Mwangi et.al observed that high integration is seen in schools where the administrators have ICT knowledge and know the importance of it.[[21]](#footnote-21) Lack of technology leaders is a factor hindering integration of ICT in education. This leads to poorly formulated ICT plans hence unsustainability. Flanagan (2003) observes that principals who are not prepared for technology leadership struggle to develop the resources required for ICT integration. When computers are introduced in schools, many lack academic vision and experience to lead ICT integration. Lack of ICT leadership often result in restricted, locked- down of computer labs. Innovative and exciting uses of computers for collaborative are impeded or blocked completely (ibid).

##  Management of secondary schools

### Ministry of education

The Ministry of Education is responsible for providing education to its citizens (Ministry of Education, 2008). The ministry’s tasks include employment of teachers for government schools, distribution of learning resources, and implementation of education policies. It is responsible for overall policy making with ancillary functions of coordination and promotion of education. These include: coordination and preparation of educational plan, providing for the conduct of examinations and promulgation of regulations regarding the conduct and management of schools.

### District Education Board (DEB)

This is the education organ at the district level that implements educational policies. The DEB has responsibilities over supervision of schools, receiving and managing grants, developing and implementing approved plans for the promotion of education and advising the minister on the establishment of new schools (Gesci. 2009)

### Board of governors, School Committees parents teachers association

These are the primary institutions of governance for public schools in Kenya. The Board is responsible for policy and strategy formulation at institutional level. It is has high influence and control over important issues like school budget. The BOG ensure sound financial management, mobilisation of resources and setting of priorities for spending funds (World Bank 2008). The school committee is responsible for developing and implementing education and training policies while PTA actively monitors school activities and mobilise additional resources (Gesci 2008.) Parents’ teachers associations play also a key role in raising funds to construct physical facilities and purchase of needed equipment and materials.[[22]](#footnote-22)

### Head teachers

 They are recognised as officers accountable at institutional level. Principals take charge of day to day administration of schools assisted by school management committees (primary section), and board of governors (for secondary schools). The private schools are managed by private owners, NGOs and churches although they comply with the regulation by the ministry of education.

## SWOT ANALYSIS

###  Strengths

Viafrica has great experience in Africa. Having worked for almost a decade, the organisation is more familiar with the environment hence minimising risks. Viafrica is also localised and operated by local people who have a connection with the local environment. This makes them more acquainted with the communities they serve. Viafrica also has a strong value proposition compared to other players in the market this is because they not only provide quality IT equipment but also maintain the equipment throughout the life cycle. They also ensure training of the users for them to make use of the tools. Viafrica foundation works with different partners in the Netherlands. These include SISO, TU Delft, Accenture, IT staffing, Close the gap among others.[[23]](#footnote-23) These partners carry out different activities in the value chain.

### Weaknesses

Coordination over long distances is difficult. For instance one respondent sited lack of clear communication between the branch in Kenya and the head office. There is also marketing deficiency at Viafrica Kenya compared to Viafrica Tanzania. There is no evidence of investment in marketing. Few people know the organisation. There is high level of stock outs leading to delay in implementations. The organisation also has few trainers therefore training programmes are at a high risk of not producing good results.

### Opportunities

The current policy implementation by the government favouring ICT for schools will lead to high demand for ICT in the educational sector. The fact that ICT is still at early stages of adoption in Kenyan schools presents a huge market opportunity for Viafrica.

###  Threats

Political uncertainties tend to destabilise operations. The 25% extra tax charged on import of second hand hardware increases logistical costs. There is also high competition from other large initiatives especially computer for schools Kenya which has strengthened its market position through partnerships with private companies, international NGOs, the government and other stakeholders.

#  CHAPTER 5: DISCUSSIONS

## Balancing financial and social impact

The current developments in the world have seen growth of social enterprises. These businesses aim at creating impact while at the same time encouraging ownership and sustainability in both the organisations and the projects. In the figure below, it can be seen that the spectrum goes from traditional Non-profits to traditional for profit and in between is a hybrid spectrum. Viafrica falls in the cycled area as it aims generating a Blended Return on Investment (BROI)

Figure 1: Social venturing spectrum



vi

 Viafrica

 Achieving both social and financial return in developing countries is difficult while at the same time donations do not encourage ownership and sustainability in the long run. Organisations need therefore to develop innovative strategies suitable for the bottom of the pyramid markets.

Viafrica as a social organisation should be driven by its social mission with an image of a business-like discipline. This requires entrepreneurial approaches to social problems which may necessitate development of new models.

 The differences in resources among schools and the fact that use of ICT is solely dependent on schools own initiatives lead to inequality in ICT implementation

From the findings, integration of ICT in schools varies depending on type of school, geographical location and level of infrastructure found in the schools. The Public national schools just like the private schools are more equipped compared to the provincial and district schools on the other end. Urban schools are also far much better than the rural schools in terms of integration and use of ICT.

 High poverty levels, limited rural electrification and other human constraints makes majority of district schools unfavourable for implementation. It does not make sense to take a quarter or more of a struggling schools system’s budget and allocate it to technologies which may end up being unsustainable in the in the long run. In order for these communities to be reached, it requires interventions by different players for instance; the government, NGOs, development agencies and the private sector.

 Provincial schools and a few district schools present the most suitable target group for Viafrica. For, these schools, the lower level needs have been satisfied and therefore may be concerned in fulfilling the higher order needs of access to ICT.

 From the findings, Eastern, Rift Valley, and Nyanza provinces have the highest number of schools; this presents a huge market since Very few schools have been reached so far. Many projects concentrate in urban areas which have few challenges.

##  Management and decision making

Bureaucratic and administrative mechanisms behind the scenes of development projects heavily constrain possibilities for an effective introduction of ICT in schools.

The six buying roles model by Fredrick E.webster and Yoram Wind shows that there are six roles played by buying centre members

### Figure 2: six buying roles model



### Six buying roles: Fredrick E.webster and Yoram Wind.

The initiator first identifies the need for purchase, the influencers views influence the buying decision, the decider approves all or entire buying decision. The buyer holds the authority to select the supplier; the user consumes the product or service while the gatekeeper controls information.[[24]](#footnote-24)

###  Role of school administrator

From the findings, management of secondary schools in Kenya is highly centralised especially in terms of policy making. However, ICT implementation takes a bottom up approach in decision making. This is because most ICT projects in schools are initiated at the school level either by the request of parents or the school management

 From the findings the principal’s role in school management is critical (initiator) and it is the starting point for a project to succeed. He plays almost all the roles in the buying process. The Principal acts as a link between the school and all the other stakeholders involved in decision making. Ensuring that principals develop knowledge and skills to become ICT leaders is essential. The principal seminars and workshops provided by Viafrica is an effort to ensure that principals become agents of change in their schools thus promoting use of ICT in education. The seminars also serve as a medium for exchange of ideas and these leaders are able to gain best practices of management and use of computers in schools.

## Training

Lessons learnt from past initiatives are that a technology- centred policy will not produce meaningful results or the expected impact on students learning. Although machines and networks are fundamental component in any ICT policy, to achieve effective gains in students learning, improved teaching practices and more efficient management at all levels, the focus should reside on people and how to improve and develop their skills and practices with the help of ICT .increased perceived value makes technology affordable

Viafrica Kenya provides computer training to a minimum of two teachers per school alongside the period during which the computer facilities are being implemented. Although providing basic skills is necessary, a lot of effort should be focused on how to make the teachers enthusiastic about use of ICT in teaching. Reports shows that less than 10% of teachers use ICT for teaching at Viafrica schools, this percentage could be raised by encouraging more teachers to join the trainings and also giving more guidance on how to use educational material

## Total cost of ownership

Given the challenges of infrastructure, finances and other constraints in the developing world, organisations need to consider other cheap computer for classroom models. By analysing the total cost of ownership, there could be other cheaper models that will reduce costs. Lower costs of ownership will lead to increased affordability hence more schools will be willing and able to acquire computers. There is need to investigate hardware and software alternatives that reduce costs for instance alternatives to stand alone desktop computers can offer equivalent or appropriate features at lower cost, hence making it affordable for many schools.

##  Partnerships and ICT implementation

Partnerships with important stakeholders with the same agenda could help serve the more disadvantaged schools. . According to professor Tim Unwind from Imfundo in a presentation “ *partnerships in ICT for education activities in Africa*” partnerships are essential in achieving what individuals cannot do alone, maximizing potential of each party and also creating mutually reinforcing benefits for all those involved[[25]](#footnote-25).

Currently Viafrica has only one partner, **Computer for growth** (Hilda Viafrica Kenya) Viafrica should seek out dynamic local NGOs that can contribute to program success. It should also pro-actively explore partnerships with private sector and ministry of education. The value created by such partnerships creates a competitive advantage based on deep understanding of the local environment. Collaboration also allows sharing of knowledge and information, pool scarce resources and create economies of scale.

# CHAPTER 6: CONCLUSION AND RECOMMENDATIONS

The main aim of this research was to find out how Viafrica can implement its CLASSworks program in Kenyan schools in a sustainable way. The main issues presented have been examined in previous chapters.

## Conclusion

From the literature we have seen that promotion of ICT use in education have taken a centre stage. The World Bank and organisation highly advocate for ICT use as it can increase the economic and social wellbeing of the poor people and empower individuals and communities. Governments and ministries of education have also enhanced the same by developing and supporting formulation of policies.

Computer use in Kenyan schools is still in early phases with different schools exhibiting differences in integration ranging from high in private and public national schools and low in rural district schools. The high poverty levels, limited infrastructure and other human constraints are challenges that are yet to be overcome.

Viafrica has put a commendable effort in promoting ICT for schools .However as a social enterprise, it should ensure its activities are aimed at creating impact in the undeserved communities; therefore social impact should be the driving force for the organisation. Focus should turn from merely providing access to ICT towards a more holistic way in which actual use and impact are considered more strongly.

Implementing ICT for schools is a very challenging endeavour especially in Africa .Lack of skills among teachers, attitudes and perceptions of principals, total cost of ownership, and digital content among others highly influence implementation and integration of ICT .They should be considered carefully. Partnerships also have a strong role in ensuring success. Sharing of good practices and lessons learned are seen to serve as signposts that will guide implementers in the challenging and iterative task of harnessing the potentials of ICTs in education.

## Recommendations

###  Target group

Provincial and some few district schools with developed infrastructure provide a suitable target group for ICT implementation for both financial and social impact. Poor schools on the other hand are suitable for social impact but serving this group requires innovative strategies for instance partnering with NGO’s and other interested groups.

### . ICT needs in schools

It is difficult to identify school needs due to lack of data. This could be an indication of a weak evaluation system. The time frame and criteria of evaluating projects should be made clear and the process should be done in a comprehensive manner. The management should come up with a proper plan against which to assess progress and achievements and to establish whether the organisation has made a difference in solving the problem being addressed. Evaluations should also be participatory. Involving students, teachers, principals and even parents will provide comprehensive feedback on the needs of the target group.

### . Partnerships

Following the digitalisation of content by the Kenya institute of education, (KIE), Viafrica should consider partnering with KIE to distribute the content. Developing content is a tedious process that requires active participation of the users and the developers. Currently it is difficult to engage teachers in developing content and they do not also use what is available because although it is relevant it does not conform to their teaching practices. Distributing already available content will not only ensure that teachers use them but will also reduce time and cost of gathering content hence more time to perform key activities.

Viafrica should also put effort in seeking collaboration with more local partners with similar objectives. Partnerships can also reduce the cost of operations through sharing of resources and activities in the value chain.

### Approaches to reach targeted number of schools

Schools administrators greatly influence ICT implementation in schools therefore Viafrica should not only conduct seminars for CLASSworks schools but should encourage participation of all willing principals from non- Viafrica schools. Attending principals’ seminars and Annual General Meetings (AGMs) is also a good avenue to interact with the principals and other important stakeholders.

Marketing is an essential component in an organisation. Without marketing efforts it is difficult to penetrate into the market. Viafrica has strong unique selling propositions but it seems few schools are aware of it. It is therefore indispensable for Viafrica to invest more in marketing.

Basing on the good customer relationships they have with the existing schools, Viafrica should create a network of existing customers. Loyal customers are good salespeople. Principals of existing CLASSworks schools can be given incentives for every school they introduce to CLASSworks program

 Viafrica should consider introducing thin clients since they require less electrical power than standalone desktop computers to reduce the total cost of ownership thus ensuring affordability and long term sustainability.

 Viafrica should also consider adding an extra trainer because as more schools join CLASSworks, more teachers will enrol for training and one trainer may be insufficient.

 If long term educational benefits are really the goal then training should go beyond focusing on basic technical and operational skills but should aim more at equipping different teachers with skills necessary to integrate ICT in learning and teaching

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# Appendices

## Appendix 1: country profile

Kenya is one of the East African countries which lie on the east coast of Africa. The land area is about 582,366 square kilometres, with a population of 41,070,934 (July 2011 est.)[[26]](#footnote-26)

Education expenditures 7% of GDP[[27]](#footnote-27).

 The GDP IS estimated to be US$ 35.78 billion (2010 estimates)

GDP per capita US$ 875(2010 est.)[[28]](#footnote-28)

Human development index- 0.509 (143 OUT OF 187)[[29]](#footnote-29)

ITU ICT development index- 2.29 (115 out of 152)[[30]](#footnote-30)

## Appendix 2:GESCI system wide approach

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## Appendix 3: Implementing agents and partners

Financial partners;

Funds

Private sector

Viafrica foundation

Donors

Suppliers

Knowledge inst.

Private sector

Viafrica country franchise

Offices partners

Government:

Central and local

Market:

NGO’s private sector

Universities public sector

Schools

Staff teachers students

 In kind goods or service

 Income generating goods or services

 Finances

 Knowledge

The figure above shows how Viafrica works.

The brown boxes depict the Viafrica foundation. The headquarters are located in the Netherlands and branches are currently in Kenya and Tanzania.

The purple boxes and arrows shows the exchange of knowledge

 The green boxes and arrows show the movement of hardware. In kind goods and services are taken l directly to the schools. The income generating goods and services move from global north suppliers through the country offices /franchise partners to the market.

The blue boxes and arrows show the financial structure. The flow of capital within Africa, to the Viafrica national and sub- national offices is sufficient to sustain the operations of the CLASSworks and KIDSworks programmes.

## Appendix 4: Organisational structure

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## Appendix 5: school networking value chain

***TEACHER DEVELOPMENT***

***SCHOOL READINESS***

***PARTNERSHIPS***

***FUNDING AND SUSTAINABILITY***

***RESEARCH LEARNING & EVALUATION***

***SCHOOL MANAGEMENT***

***APPROPRIATE TECHNOLOGIES***

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