

**OPPORTUNITIES PRESENTED BY AN ICT LITERATE SOCIETY THROUGH THE
INTEGRATION OF ICT IN THE NON-FORMAL EDUCATION: A CASE OF JUA KALI
SECTOR IN KENYA**

BY

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Abstract

There are a number of opportunities presented by the ICT integration within the education sector. The Jomtein World Conference (1990) on Education For All (EFA) to whose resolutions most African Countries are signatory emphasized on the education for all. The EFA strategies include the establishment of non-formal education units. Strathmore Educational Trust (SET), a Public Charitable Trust incorporated in Kenya, established to promote educational initiatives started the Informal Sector Business Institute (ISBI) in 2004; a Non-formal education initiative to train *jua kali* artisans ICT and business skills. Since its inception, more than 10,000 people have been trained in various skills.

To enhance these benefits presented, this study investigated the spread of ICT in the non-formal education system in Kenya by studying 120 artisans from the same environment, 60 who had undergone ICT training and 60 who had not. Using a Z-test statistic, the study proved that; those who had been trained in ICT and business skills at ISBI were much better in utilization of ICT in running their businesses.

From this study, most artisans gained their trade skills through apprenticeship where skills in ICT and business are not emphasized. ICT is a key component for people in the informal sector and should be incorporated in all training initiatives meant for the informal sector to enhance productivity.

1.0 INTRODUCTION

Literacy has been described by UNESCO (2013) a fundamental human right and the foundation for lifelong learning. It is fully essential to social and human development in its ability to transform lives. For individuals, families, and societies alike, it is an instrument of empowerment to improve one's health, one's income, and one's relationship with the world (UNESCO, 2013). The uses of literacy for the exchange of knowledge are constantly evolving, along with advances in technology (UNESCO, 2013). There are many similarities between literacy and ICT access, literacy and ICT access are closely connected to advances in human communication and the means of knowledge production. Access to ICT is embedded in a complex array of factors encompassing physical, digital, human, and social resources and relationships. Content and language, literacy and education, and community and institutional structures must all be taken into account if meaningful access to new technologies is to be provided. They involve not only receiving information but also producing it (Warschauer, 2002)

Low levels of literacy and education can impede the economic development of a country in the current rapidly changing technology driven world (African Economist, 2013). Access to technology, however, is highly unequal. A computer in some parts of the world can cost a month's salary or more. This differential (the 'digital divide'), is not just an issue of the polarization of the information rich versus the information poor. It is also a divide between men and women everywhere. (UNESCO, 2013). Therefore efforts must be made to reduce this digital divide for more benefits to accrue to most people Investment in ICT should be a priority for skill enhancement in the informal sector. Education for all (EFA), TVET for all and ICTs are keys to empowering rural people. This action programme for empowerment and capacity-building must start in the millions of villages and city slums spread all over Africa, Asia and Latin America (Basu and Majumdar, 2009)

In the African situation the levels of literacy have been described to be alarming (UNESCO, 2000) the situation is more critical in the areas of ICT considering the advancement in the sector. In the information society the defence of digital inclusion is fundamental not only for economic reasons or employability, but also for social-political reasons, principally to ensure the inalienable right to communicate (Warschauer, 2004). ICT can do and play a number of roles in education and one of them is developing the kind of graduates and citizens required in an information society (Shaheeda Jaffer et al, 2007) quoting Department of Education South Africa (2001). The Department alludes to the fact that an ICT illiterate society suffers immensely from the pressure that is ascribed with Morden society. It is therefore important for an African society to be abreast with this reality and employ mechanisms to improve ICT literacy.

Considering that one of the MDG was the broadening and enhancement of the number of people who are computer illiterate, then everything needs to be right in this sector. In Kenya for several years running the mobile phones sector has emerged to be the leading source of government

revenue through taxation. In 2007 the sector remitted KShs 4.8 billion in taxes to the exchequer, accounting for slightly higher than 10.89% of total GDP (Waburi, 2008). Litondo (2011), quoting Silarszky et al (2008) has identified some of the benefits presented by ICT as job creation, productivity, and market efficiencies.

In Kenya, the Kenyan government has taken up this challenge and in its education policy framework; ICT has been considered to be one of the core pillars. In the vision 2030 strategic plan, ICT has been aptly identified by the Kenya Vision 2030 as a vital growth area. The Effective and full exploitation of all the opportunities in this sector is expected to translate into high and sustainable economic growth and boost international competitiveness. It is also expected to improve standards of living and aid in equitable income distribution amongst the population (Republic of Kenya, May 2011). Furthermore, the Kenya government's focus at the moment is towards an ICT society. ICT therefore represents a central component in implementing the Vision and if properly managed, its introduction to all facets of the Kenyan economy (Kenya ICT Board report, 2007-2013)

UNESCO acknowledges that industrialization demands education in science and training in skills (UNESCO, 1996). Industrialisation has been driven by an educated human workforce and therefore a literate society in Africa is the key to industrialisation. The engagement to the achievement of the requisite skilled/literate workforce has been seen to be the low transition rate from one level of education to the other (MOE, 2010). In Kenya, like many other African countries, efforts have been made to establish other channels for the development of these skills. Johnson and Adams (1992) have described these channels to be vocational education and training (TVET) centres. The aim of these centres is to provide direct means of providing workers with skills more relevant to the evolving needs of employers and the economy (Johnson and Adams 1992)

It has been widely acknowledged by many studies and policy documents that one of the activities taking place within the informal sector is apprenticeship training. In one of the studies (Yambo, 1991), established that there were some 80,000 informal sector apprentices compared to the 55,000 trainees in the formal training system, in the sample studied. Accordingly, it is estimated that there are more school leavers engaged in the informal sector apprenticeships than in all formal sector training institutions in Kenya, yet training in business and ICT skills is not emphasized.

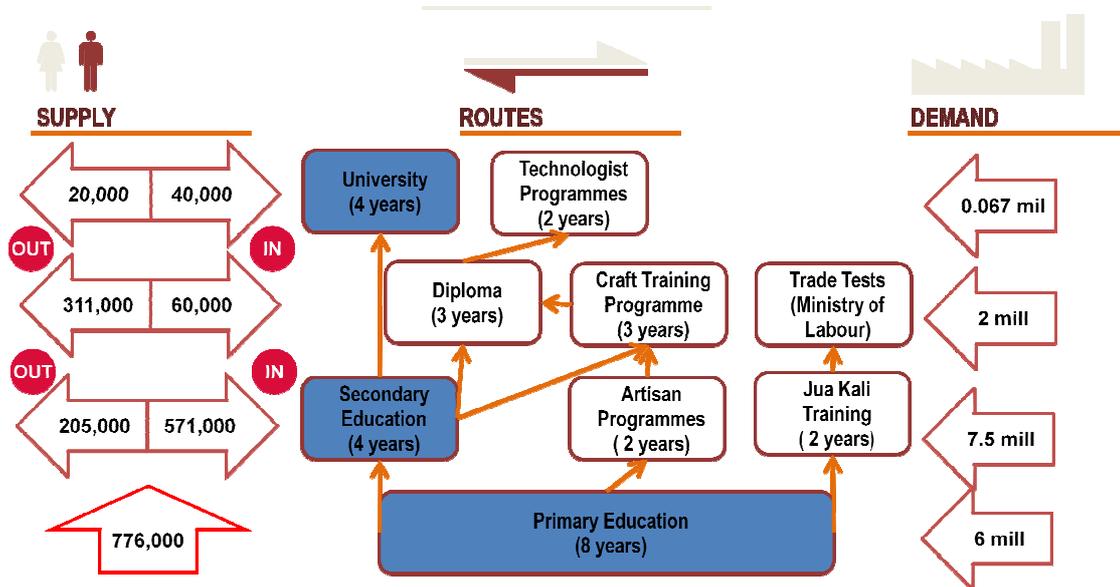
Small and medium enterprises (SME) are an important factor in the East African economies because they create employment. The increasing competition through globalisation puts them under considerable pressure. Through the rapid spread of information and communication technologies (ICT) and ever decreasing prices for communication, markets in different parts of the world become more integrated enterprises that use different forms of ICT rate their effects mostly positive. On top are computer applications that are assumed by 88 % and 76 % of users to considerably increase management efficiency and competitiveness respectively (Matambalya and

Susanna, 2001). Flexibility is considered to be a major source of competitiveness for SMEs compared to larger enterprises. The use of ICT could now on the one hand increase the competitiveness of SMEs as they enable the creation of more flexible links with trading partners because of faster and more reliable communication channels. On the other hand ICTs could help bigger enterprises to increase their flexibility through a restructuring of the organisation which will enable them to adapt quicker to changing conditions respectively. From a survey conducted in Tanzania and Kenya it was noticed that those enterprises using different forms of ICT rate their effects mostly positive. On top are computer applications that are assumed to increase management efficiency and competitiveness significantly by 88 % and 76 % respectively. (Susanna, 2001)

Since SMEs can use ICTs both as an input in the production process, and during the transaction process while selling their products or acquiring inputs, there are various ways by which they can influence the performance of an enterprise. ICTs can enhance enterprise performance with indirect cost savings. In addition to these short run impacts of ICT adoption in the production process, the use of ICTs in the transaction process can also foster input and output market expansion. However, in the long run, ICTs might have an even bigger impact in terms of completely restructuring the production process, influencing transaction methods, increasing flexibility and improving outputs (Chowdhury, 2006)

The Kenyan government policy framework for Small and Medium-sized enterprises (SME) development was completed in early 2004. The policy framework relates to the overall goal of developing vibrant small and medium sized enterprises within the informal *Jua Kali* sector capable of promoting the creation of durable, decent and productive employment opportunities and stimulating economic growth (ILO, 2001). Medium and Small Enterprises (MSE) sector in Kenya contributes to GDP, creates jobs, develops a pool of skilled labour for future needs, provides managerial learning opportunities, increases the savings and investments of local Kenyans and reduces poverty (Republic of Kenya, 1992). The informal sector, consisting primarily of NGOs, plays a significant role in advancing efforts at building ICT development in Africa, especially with a view to the use of ICT technologies and applications for dealing with the scope of issues which have become traditionally associated with NGO efforts (Okpaku, 2002).

2.0 Model of progression in the educational system in Kenya



Source: census (2010), Kenya bureau of statistics, internal ISBI analysis.

The educational model in Kenya is characterized by a significant number of drop-out students. The informal sector is the major employer of these dropouts. In 2009, the secondary school net enrolment rate was approximately 50% (World Bank, 2009), while the transition from primary-to-secondary school was at 55% (MOE, 2010). The education permanent secretary during the secondary selection exercise said that the current transition rate from primary to secondary schools stands at 77 per cent (Oduor, East African Standard, 4th Feb 2013). Most of the dropouts from the education system end up in the informal sector where majority gain skills through apprenticeship, training them in ICT skills will make them better.

3.0 ROLE OF NON-FORMAL EDUCATION IN CREATING A LITERATE SOCIETY

Non-formal education can be defined as any organized, systematic and quality education and training programmes, outside the formal school system, that are consciously aimed at meeting specific needs of children and adults (MOEST, UNICEF, Feb, 2005). It is a form of administration and program provision (by government and non-governmental bodies), which takes place outside the formal education system. It is simple and flexible and can be delivered at any place convenient to the learners. It is generally designed to meet the basic learning needs of disadvantaged groups and can be availed of at any age.

The department of adult education within the Ministry of Culture and Social Services of Kenya was established in 1966 to run the adult education programme. Its objective was to equip adult learners with literacy and numeracy skills, as well as knowledge in other skills, which they required to be employed by the new independence administration. NFE is provided to those

sections of the community who have no access to or have dropped out from Formal Education. The objective of non-formal education has been to complete the ‘unfinished business of primary schools’ (Sifuna, 1975)

Although more and more people continue to invest in Formal Education, there is a high rate of unemployment among the educated. As a result, policy makers, planners, economists, educationists and leaders in developing countries have started to question the relevance of Formal Education. This however, does not mean that Formal Education has totally failed; but rather it has not adequately met the needs and aspirations of the learners. Thus Non-formal Education has emerged as a search for alternatives in educational experience because formal education has not successfully responded to development problems.

This form of education has also been employed in a number of and elsewhere with mixed outcomes. For instance in India it was implemented in 1979 and has been used to develop life-skills related subjects varying from income generation to developing knowledge, skills and attitudes for self-employment and small business creation (Shaeffer, 1992). In Bangladesh, integrated non-formal education started in 1990 with an emphasis functional literacy courses and post literacy and continuing education for consolidation and retention of literacy skills by NFE graduates (Karin et al. Aug. 1997).

4.0 The benefits of Non-formal training to *Jua Kali* artisans in Kenya

Information gathered about specific courses offered at ISBI whether they were beneficial to *Jua Kali* artisans and the information gathered is recorded in Table 4.1

Table 4.1 The benefits of ISBI courses to *Jua Kali* artisans

Skills taught at ISBI	Knowledge skills has helped (frequency)	Percentage %
Marketing	60	100
Business ethics	28	28.67
Business English	56	93.33
Basic accounting	60	100
Computer skills	60	100
Business planning	51	85
Management	37	61.67

Source: data obtained from administration of research instrument in April 2007

Table 4.1 presents a summary of the courses taught at ISBI and the number of artisans who have benefited by attending the courses.

Benefits of the Information Technology skills course to *Jua Kali* artisans.

Data was gathered on how the *Jua Kali* artisans use their computer knowledge and the data obtained is presented in Table 4.3.8

Table 4.2 Benefits of the computer skills course to *Jua Kali* artisans

Business practice	Trained at ISBI (frequency)	%	Didn't train at ISBI (frequency)	%
Marketing	20	33	3	5
Keeping business records	32	53	0	0
Writing business plans	46	77	0	0
Writing business documents (invoices, reports, letters, etc)	56	93	3	5

Source: data obtained from administration of research instrument in April 2007

Table 4.2 shows how artisans use their computer skills. The data is arranged according to how the artisans use their computer skills and according to whether they have undergone the ISBI training or not.

Those artisans who had attended the ISBI training in business skills had an advantage in the application of computer knowledge in the day to day running of their business enterprises as 33 % use these skills in marketing. For example the artisans market their products over the internet, by posting their products and addresses for contact by respective buyers. Those who use computer skills in keeping business records were 53% and 77% said that the computer skills helped them write business plans and 93% said that the computer skills were beneficial to them in writing business documents like invoices, reports and letters. A majority of artisans benefited from more than one use of the computer skills and hence the overlap. The usage of computer skills is low among those artisans who had not undergone the ISBI training as only 5% used computer skills in marketing and in writing invoices, reports and letters. The computer skills taught at ISBI has helped the *Jua Kali* artisans prepare letter heads, write introductory letters and write quotations; 11.6 % of the artisans interviewed had bought computers for management purposes of their business enterprises.

Z – test statistic on use of Information Technology skills in business

A Comparison was done between the artisans who had undergone the ISBI training and those who had not in use of Information Technology in business using a Z - test. The data is summarized in table 4.3

Table 4.3 Z-test statistic on use of Information Technology skills in business

How artisans use IT skills in their business	ISBI ARTISANS		NON-ISBI ARTISANS	
	Number	%	Number	%
Marketing	20	33.33	3	5.00
Keeping business records	32	53.33	0	0.00
Writing business plans	46	76.67	0	0.00
Writing other b. documents	56	93.33	3	5.00

Source: data obtained from administration of research instrument in April 2007

Table 4.3 summarises data in terms of frequencies and percentages on the Jua Kali artisan's use of Information Technology skills in marketing, keeping business records, writing business plans and other business documents.

The hypotheses for the study were:

H₀ - there is no significant difference in percentage in the usage of computer skills in marketing, keeping business records, writing business plans and other business documents between artisans who have undergone the ISBI training and those who have not undergone through the ISBI training i.e.

$$p_1 = p_2$$

H₁- there is a significant difference in percentage in the usage of computer skills in marketing, keeping business records, writing business plans and other business documents between artisans who have undergone the ISBI training and those who have not undergone through the ISBI training i.e.

$$p_1 \neq p_2$$

$$p_1 = \frac{33.33 + 53.33 + 76.67 + 93.33}{4} = 64.17\%$$

$$p_2 = \frac{5.00 + 0.00 + 0.00 + 5.00}{4} = 2.5\%$$

We use the Z statistic for difference in proportions,

$$Z = \frac{p_1 - p_2}{\sqrt{p_c(1-p_c)\left(\frac{1}{n_1} + \frac{1}{n_2}\right)}} :$$

$$\text{Where; } p_c = \frac{p_1 + p_2}{n_1 + n_2}$$

$$\text{In this case; } p_c = \frac{64.17 - 2.5}{60 - 60} = 0.56$$

$$\begin{aligned} Z_c &= \frac{64.17 - 2.5}{\sqrt{0.56(1-0.56)\left(\frac{1}{60} + \frac{1}{60}\right)}} = \frac{61.67}{\sqrt{0.56 \times 0.44 \times 0.033}} \\ &= \frac{680.46}{0.0911} = 7469.37 \end{aligned}$$

At 1% level of significance the tabulated Z value Z_T is 2.58

Since $Z_C > Z_T$ The null hypothesis is rejected in favour of the alternative hypothesis. We conclude that the percentage of the artisans who have undergone the ISBI training who use computer skills in marketing is significantly higher than those artisans who haven't undergone through the ISBI training.

5.0 Conclusion

Information technology should therefore be incorporated into all training programmes meant to improve skills for the informal sector. Any training which does not take this into consideration becomes irrelevant in this information age. Information technology revolutionalises all the skills that the informal sector needs; it also makes it easy for artisans to search for information quickly. In this research, Information Technology improved the artisan's record keeping, marketing, and business planning created new opportunities. The artisans were able to advertise their products on the internet and write all their business documents using computers after undergoing the ISBI training.

ICT skills had an impact on all the other business skills the artisans were taught at ISBI. For instance, It revolutionalised their marketing, keeping business records and business planning as it became easier for the artisans to practice these skills using a computer.

Computer skills helped them to improve their marketing skills, keeping business records and writing business documents. Seven artisans (11%) of the artisans saw the reason why they should use computers in running their business enterprises. Most of the courses taught were incomplete without computer knowledge. The starting of an ICT centre and hosting of a website by ISBI for the artisans to display their products on the internet to attract more customers is an indication of

how information technology skills are necessary for the informal sector in this age of Information Technology.

ICT should be part of both the delivery and content of education, to minimise the digital and knowledge divide being experienced at the moment. Through the Vision 2030 goals, the Kenyan government has begun to implement strategies that will address these issues. Both private and public player should be involved.

Thirty million out of 38 million Kenyans have mobile phones. Mobile applications should be developed targeting the informal sector. It will be easier and cheaper as there are many people in the informal sector, thus making it convenient for any ICT skill based on mobile application reaching many people.

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