TIPS

F O R U M 2003

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P A P E R S

Changing ICT Sector In The SA Economy

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CHANGING ICT SECTOR IN SA ECONOMY

1. Executive summary

The paper attempts to give an operational definition of the ICT for the purpose of arguments presented in this paper.

The paper addresses the changing ICT sector as discussed in various studies. Factor such as salaries, gender, age, qualifications, size of the company and race will be analysed to assess their economic impact in ICT.

This paper addresses the current status of BEE in South Africa. This section discusses the phases of ICT Charter and their meaning in the ICT sector. It also looks at some burning issues facing ICT sector in the implementation of BEE. Barriers to women development in the ICT sector are discussed.

One of the interesting parts of this paper is the section that addresses cyber crime in South Africa. In this discussion the paper raises a lot of challenges that South Africa is faced with, in dealing with "mouse and keyboard" crime.

The argument on the relationship between ICT and poverty is discussed. This looks at factors such as agriculture, culture and governance, education and health.

"Let us fight for e-ForAll for competing economy"

2. Definition of ICT

What is ICT? It includes the following sub-sectors as presented in the ICT charter :

- Information Technology
- Telecommunications
- Communications
- Electronics
- Multi-media

Is it reality that this sector is changing? If it is changing, which direction is it taking? I do not know. You are the best person to answer this question.

ICT started some centuries ago to achieve different objectives. In South Africa we used "ngoma" in one of the African official languages, i.e drum in communicating with other people who are far from us. We also used ancestors to communicate with our bread winners who were working far away from home, in different cities. One of the objective of this communication was for sustainable development of the families. Where are we today?

3. The current ICT sector in South Africa

1. Salaries in ICT sector

There has been a myth that SA ICT skilled labour is being drained to US. It was believed that the cause of this brain drain was no-competitive SA salaries compared to US. This is true not for all ICT skills. Stephen Whinford (2003) indicated that SA ICT sector is paying the same amount of salaries as SA would pay to local programmers for the same job. SA has top local programmers, though they cannot be seen as the cheapest compared to US and Indian.

The challenge in SA is to attract South Africans who are working in ICT abroad to come back home and support SA economy. May be South Africa is overgeneralizing on the number of SA citizens who are working abroad. How many South Africans are leaving the country from this sector? The salary survey done by IT Web (2003) found that 16% of the respondents were intending to leave the country last year with 24% saying they might leave. Of that number 38% were destined for the UK, 15% for the US 12% for Australia and 9% for Europe.

It is not only the salary issue that causes this brain drain. As a country it is important to consider other causes such as economic history of SA, stability of the country in terms of economic trends, technological changes and other related factors.

Trade and Industry Minister was quoted as saying that South African abroad could provide much more needed expertise and that government would prefer these posts to be filled by South Africans, (Tracy Burrows, 2003). This includes the IT industry.

Competitive salaries seem to be a cause of concern to those South Africans who are working abroad. What is a competitive salary? Labour economists have different understanding in this concept. They refer to it as salary higher than the average salary in the market. On the other hand, some would see competitive as the above average salary in the sector, in this case ICT sector, they complicate the matter by perceiving a salary as a function of effort, qualifications, skills and set targets.

The research that was conducted by IT Web (2003) shows that there is a slow growth rate of salaries that is expected in IT sector. Even though professionals in this sector hope that salaries will at least keep up with inflation.

There are number of factors that have an impact in salaries in the ICT sector. Factors such as gender, race, age, qualifications, experience, skills, size of the company and working hours are important in determining the scales of salaries. The salary survey done by IT Web (2003) indicated that :

Gender

- Male reported the average salary growth of 2.8% higher than last year's, i.e. R22 090 as compared to R21 492.
- White females reported salary at 4.8% higher than that of last year's

- It seems like there are difference between male and female salaries. If this is the case in the sector, why and how to overcome this? Is this discrimination?

Age

The survey found that age and experience go hand in hand. In the ICT sector those who are in the 46 to 50 years of age are employees who are earning highest salaries. Is it important to attach the value of salary to the age? Is it true that people who have been in the sector for many years should be rewarded for this? Is this a true definition of experience? These are some of the issues ICT sector and SA as a whole should consider when dealing with the relationship between age, experience and salary.

Qualifications

From the survey findings, salary scales in general in this sector match the qualifications. Meaning that the higher the qualifications the higher the salary. What is surprising from these findings is the fact that technikon diploma holders are earning less than those with matric. Should the sector attach the value of salaries to qualifications, and why?

Size of the company

It makes sense to say the bigger the company, the higher the salaries of its employees. In this sector it was found that employees working for small companies with less than 10 staff earn slightly higher salaries than those employed by the large corporates with over 5000 employees. Is there a relationship between size of the company and salary scales? How does the sector view this relationship?

Hours of work

In the ICT sector, do companies calculate the monetary value of hours that the employees work? Is this easy to apply across all ICT fields? From the findings employees who work 10 hours a day earn slightly higher, more that R26 000 a month.

Race

Does the ICT sector still experience the challenge of different salary levels in respect of race? If this is true, is the sector prepared to deal with the challenge, how and when will the sector resolve this? The survey found that the low number of PDI's in the sector in top management earn low salaries.

Considering the discussion above, it follows that all the factors mentioned above are linked to SA economy. It is therefore important to workout solutions to the above challenges. When opening the discussion of salary being a function of all factors discussed above, one tempted to talk about an argument

among salary scales, economy and productivity. Is there any relationship among these factors?

4. BEE in the ICT sector

What is BEE? It is not an easy concept to define. It embraces involvement of blacks in the South African economy as whole. A further question will be the scope of blacks. This is defined by the SDA and EEA.

After apartheid era South Africa finds itself in situations where there is a huge imbalances of the distribution of wealth. This is a challenge that needs to be faced and rectified.

Different strategies have been developed to address this challenge. These include legislation in skills development, gender discrimination, BEE and many others. These strategies are also helping South African democracy to grow and compete with that of other countries.

In its struggle to strengthen its democracy, South Africa look at various economic sectors including ICT. ICT charter is in its way to rectify economic problems of the country. In this charter BEE is seen as one of the key success to the ICT sector. Why ICT charter? This is the document that will help in the facilitation and monitoring process of implementing BEE in ICT sector.

Is South Africa as a country winning in addressing BEE in the ICT sector?

In the ICT charter, there are three phases to the implementation of BEE in the sector. These phases are :

- Phase one (1994 –1999), experimental and touch of the realities and challenges. Brian Khumalo, CEO of Leaders Unlimited sees this phase as the SWOT analysis phase with establishment of BEE Commission, BEE procurement policy, commencement of privatisation and establishment of various organisations such as Ntsika, UYF, and many others.

- Phase two (1999 – 2003), This a time of debates from government representatives, representatives of the ICT sector dominated by the issues, elitism and enrichment versus real empowerment. Brian explains this is phase as Strategic objective and goal setting era starting in 2002. This the time of the development of ICT charter and debates to achieve implementation of the BEE in ICT.

- Phase three (2004 – onwards), era of cooperation from the industry and measurability of BEE indicators. Brian explains this as an implementation era. This is the time when the sector will be monitored by legislation on compliance of the BEE. During this time the sector will be serious in implementing BEE. Employers who resisted and put blind eye during the first and the second phase will be running around to ensure compliance.

The draft document of the ICT charter covers various issues that will assist in implementation. These include key indicators/targets of the BEE in ICT, scope of the sector, linkage to legislative process, inclusivity, etc.

It is difficult to discuss success of the BEE strategy in ICT. From the beginning of phase two BEE indicators will start flashing. This will be the good measurement level of the strategy. If South Africa wins in implementing this, how will this benefit the economy of the country?

Some of the challenging issues raised in the BEE conference on 13 August 2003, Gallagher Estate Midrand

- No BEE happening , no commitment from industry, 10 years now
- Seta's are working, sector is not commitment
- Is the industry implementing SDA and EEA?
- Are these companies submitting EE report to DOL?
- This a delay, now what?
- Process is too slow and frustrating to BEE companies
- Does the industry need stick from the government?
- Are local and multinational companies acting on BEE, i.e. ownerships and other related aspects
- Nothing happening only roadshows

Women in ICT

ICT sector has been seen as a male-dominated sector. South African understood this in such a way that female felt embarrassed by working for this sector. Today South African women are starting to understand working in this sector.

Even though women are challenging this sector, there are still a number of concerns that are barriers to working women including women in ICT. Some of these concerns include :

- Management style in the sector. Research by van der Merwe and Stander (2002) revealed that about 60% of the women in ICT are concerned about the management style in this sector. Can this be an excuse for woman not applying positions in this sector? Which style of management most concerns women in the workplace? Is this an overall management style applied to women across all economic sector?

- Training and re-skilling opportunities. Women are claiming that they are not given training and re-skilling opportunities in this sector. Is this true? Do they really have required educational background? What should be done to address this?

- The dual roles of women. Women have family responsibility as well as work responsibility. Women see this as stumbling block to their career development. In their study, van der Merwe and Stander found that 52% of the women in ICT blame family commitments as challenge in their career development. There has been a debate among South Africans on 50/50

between married couples. Is this working for this country? If it is working, why women are still pin-pointing famiy commitments as barriers to career development? What is the impact of this in SA economy?

- Women claim to have higher administration workloads than men. The research found that about 51% of the respondents are complaining that they cannot succeed in ICT sector because they have more workplace administration job than men.

There number of challenges that women are faced with both inside and outside their work environment. If South Africa believes that women can also contribute much on its economy, all these challenges should be dealt with in order to increase economic growth. May be a question will be, do these challenges have an impact on SA economy, if yes, how?

Some of the burning issues that were raised in the BEE conference13 August 2003, Gallagher Estate Midrand that also affect women are :

- Assess and identify suitable BEE partners on clear criteria
- Monitor Boards of BEE performance
- Sustainable BEE strategy
- Non-job creating empowerment vs job-creating empowerment
- Facilitate transfer of ownership vs self created ownership
- Capital focused empowerment vs knowledge based empowerment
- Local focus vs global focus

The question is if these challenges ca be implemented, is there going to a more comprehensive, user friendly strategies to attract women in ICT? Is there any relationship between women in ICT and SA economy?

5. ICT crime and the economy

Message to South Africa. Technology is dominated by two types of people: those who understand what they do not manage and those who manage what they do not understand, Putt's law.

South Africa has been faced with different types of crime such as women and children abuse, family violence and others. These are seen as well-known crimes which may also have an impact in the growth of SA economy. As other developing and developed countries SA has entered an information world. Information world, like any other challenge, brings with it both SWOT (Strength, Weaknesses, Opportunities and threats).

ICT fraud is not challenging only South Africa, but even other countries around the world are experiencing this problem. But how can the multinationals agreed on cyber crime? John Doolan (2003) asked related questions on trying to alert people on this complicated type of crime. Some of these questions where :

- When is a crime not a crime?
- What constitute a cyber misdemeanour?
- How do you provide proof of fraud committed via a mouse and a keyboard?

The world spent countless resources in fighting this crime. It is such a difficult crime to deal with. Research and development have been conducted to produce powerful products that can help to deal with this crime. In developing these products, the problem is the pace in which the ICT sector changes. It becomes important to differentiate cyber crime and other types of crimes. The issues here is not populated the whole sector with police unlike in dealing with other types of crimes. The underlying challenge is as follows :

$$\text{The degree of cyber crime} = \frac{\text{The pace of technological change}}{\text{The pace of technology obsolesce}}$$

If scientists were to work out some calculations around this equation, it follows that the cyber criminals should always behind technology in order to curb with this crime. Is that possible?

E-banking was starting to be more user friendly for business people and busy South Africans who do not have time to go to the banks. July 2003 will not be forgotten for its shocking event where cyber crime attacked some of South African banking institutions. During this time bank clients asked many questions about security over their monies. John Doolan (2003) talked about the paradigm based on traditional banking values that "We will look after your money". But after you have signed some cheques and/or taken cash from the ATM or teller, it is your problem. Who must protect these monies?

The law and cyber crime

"Does South Africa has enough legislation to fight this type of crime? In South Africa the process of combating cyber crime is under way", Deloitte & Touche (2003). In the analysis of cyber crime, three questions were raised by the South African Law Commission Discussion Paper 99, Project 108, Computer-Related Crime: Preliminary Proposals Reform in Respect of Unauthorised Access to Data and Software Applications and Related Procedural Aspects. These questions are :

- Whether the authorised accessing of computers and unauthorised modification of computer data and software applications should attract a criminal sanction? Is it justified to sanction these actions with criminal penalties?

- If it is accepted that they should lead to criminal liability, is it necessary to create new offences to criminalise these actions?

- What provision should be made for the investigation and prosecution of such an offence, given the unique nature of electronically stored information?

All the above questions raise constraints in dealing with cyber crime. Currently there are crime related acts that are helping South Africa to deal with crime. These include :

- Copyright Act of 1978
- Trespass Act no. 6 of 1959
- Adjustment of Fines Act no. 101 of 1991
- Criminal Procedure Act no. 51 of 1977

Are these legislation enough and relevant in dealing with Cyber crime? How recent are they in addressing fast changing technology? Many proposals and discussion paper to legislation have been laid down in an attempt to address this crime. Where are we, do we currently have direction in curbing this crime?

It is interesting that the working paper in Computer-Related Crime: Preliminary Proposals Reform in Respect of Unauthorised Access to Data and Software Applications and Related Procedural Aspects, considers the pitfalls in a number of different countries including USA, Canada, UK, Singapore, Australia and European Community, hence the equation of cyber crime as presented above.

The targets for this working paper were :

- Criminalisation of unauthorised access to computer data and software applications. This involves aspects such as criminal action, access, unlawfulness, culpability and knowledge of unlawfulness

- Unauthorised modification of applications or data in computer system. This encompasses facets like trafficking in computer passwords, interference with use of computer systems, search and seizure, evidence as well as territorial jurisdiction.

If South Africa can address most of the cyber crime possibilities, it will be a good starting point in dealing with this crime. This crime requires fast moving technological environment where country can learn, copy, modify and implement other countries' technological experiences.

The impact of cyber crime in SA economy

To addressing this relationship, it is important to look at the following factors

- Perception of international investors in local cyber crime
- Local technological change
- Understanding technology and its importance
- Measuring the impact of cyber crime in SA economy
- The relationship among technology and factors such as political, environment, economical, social and legal.

The impact of cyber crime in SA economy is a topic on its own. It requires continuous detailed studies and committed researchers to come up with informed findings and recommendations that can help South African to take informed decisions.

6. The relationship between ICT and poverty

It is important to define poverty before one looks at the relationship between ICT and poverty. It is defined in various ways. For the purpose of this discussion the definition of Adeya (2003) preferred, where poverty is defined in two different ways, firstly, absolute poverty – refers to subsistence below the minimum and socially acceptable living conditions. Secondly, relative poverty – compares the lowest bracket of a population with the upper bracket.

Is there any relationship between ICT and poverty? There have been a heated arguments at various conferences on the relationship between ICT and poverty. "The poor are excluded from much of the world's information and no one has begun to outline a solution to the problem", said Wresch (1996:58). Is this exclusion resulting in poverty? How?

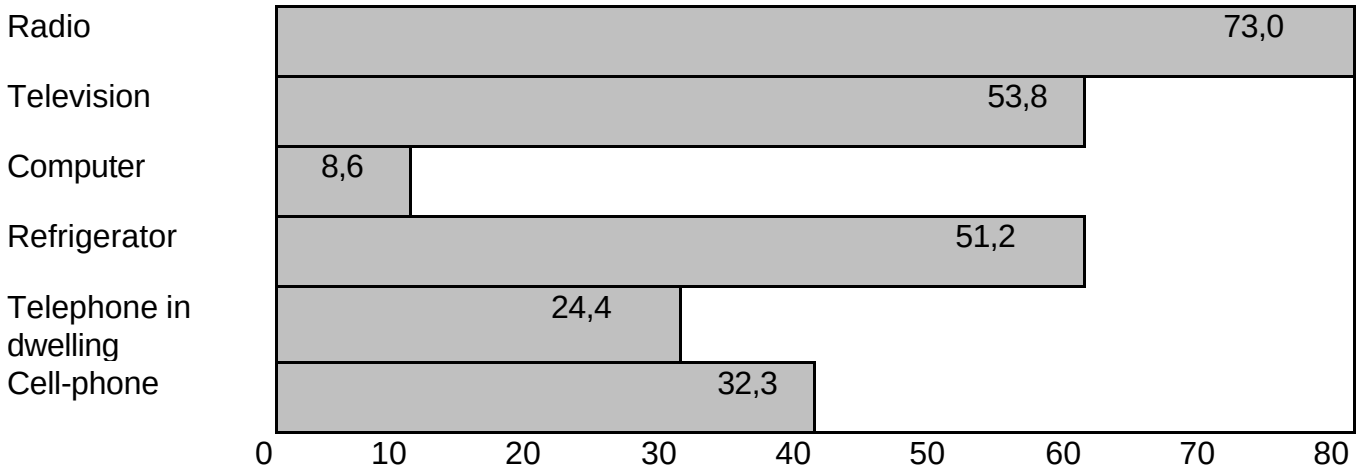
Adeya (2003) recommends e-ForAll for the following three principles :

- ICTs has the potential to improve the livelihoods of low income people by reducing by reducing costs of providing services to the poor
- The policy would put ICTs at the services of all in the society by encouraging concrete programmes to open opportunities for the poor and empower them
- ICT development for socio-economic change needs huge state support and financing, but ICT initiatives to combat poverty must be suited to the low productivity environment in which they are applied.

Heeks (1999) addressed the relationship between ICT and poverty on his study, and he said, "The poor knowledge to access, assess and apply existing information and need resources for action more than they need access to new information; the poor need access to new, locally-contextualised information more than access to existing information from an alien context; the information needs of the poor may be met by more informal information systems than by formal ICT-based systems; the poor will reap the fullest benefits of ICT only when they know and control both the technology and related know-how".

Before one starts addressing this relationship, it is important to know the current status of SA in accessing ICTs.

Percentage of households with selected household goods in working condition - October 2001



(Source Stats South Afrca, Census 2001

- Nearly three-quarters of households in the country had a radio, well over half had a television, and just over half had a refrigerator. At the other end of the scale, fewer than 10% had a computer

- This graph masks differences between population groups. For example, the much-spoken of "digital divide" is evident in the fact that less than 2% of African-headed households had a computer, as opposed to 46% of white-headed households.

  Similarly, only 12% of African-headed households had a telephone in the home, as against the national total of 24% shown in the graph. This may in part explain the popularity of cell-phones; twice as many African-headed households had cell-phones (25%) as had fixed-line telephones.

Most arguments around poverty focus on insufficient nutrition, inadequate shelter and other related aspects. It is only now that people start looking at lack of access to ICT as an element of poverty.

The relationship between ICT and poverty can be analysed by looking at various factors that constitute a person's living. For the purpose of this discussion, the following factors will be looked at :

- Agriculture
- Culture and governance
- Education
- Health

In order to analyse the relationship between ICT and poverty, the paper will consider the relationship between ICT and the above-mentioned factors.

ICT and agriculture

Many of South African people stay in the rural areas where they depend on farming to earn a living. For this farming to produce enough for the farmers, workers and society as a whole, it needs effective communication. Richardson (1998) refers this to a 'communication for development' approach for catalysing internet services for rural stakeholders, an approach that began with the needs of people rural and agricultural communities.

It is vital that South African farmers have access to internet connection, telephones and fax lines in order to market their products to local and overseas markets. Access to ICT by farmers can also ease communication means between local and overseas farmers. It is important for farmers to get e-learning in order to learn on how other farmers are dealing with different farming challenges.

South Africa is also encouraging women to get more involved in farming as a career. For these women to succeed in farming as a career, they must be able to access ICTs as a marketing instrument.

The relationship between ICT and agriculture has proved to be beneficial to Indian women in Asia. This was revealed in a study that conducted by UNDP (2000) in India. The study was evaluating how information technologies have been used in poverty eradication especially in connection with the needs of women farmers. The study wanted to determine the need to provide women farmers with networked computers with internet access. It looks at a number of issues including information concerning agronomic practices and farming methods, information on to access and use new technologies, market new and agricultural commodity prices, weather predictions and rainfall patterns, recommended crops for the season as well as information on meetings and workshops on relevant issues.

It is argued that this kind of study can benefit women as women farmers generally remain isolated from the mainstream of agricultural training, research and development, partly due to limited literacy levels.

> Are the above the types of issues need to be looked at in order to benefit South African women farmers? Are South African women farmers really need an assistance in accessing ICT? Are these the kinds of communication problems that are affecting all South African farmers irrespective of gender? Looking at the technological and economic development of this country, is this the right time to face all these farming ICT issues?

ICT, culture and governance

There are people who believe that cultural beliefs are hindrance to the adoption of ICT in many rural areas. These include Janczewski (1992), Rycken (1995), Manji et. Al. (1998),Qureshi (1998), Morales-Gomez & Melesse (1998) and Hasan & Dista (1999). Is this belief true? This might be caused by about ICT gap that occurs as a result of the vulnerability of people to ICT, and the time taken for generations to access ICT. It follows that there is an'ICT-cultural gap that needs to be addressed. The question will be how to deal with this challenge.

"If you are to conceal information to people, publish and give out those booklets". This is true because people are lazy to read. It was also proved by Ryckeghem (1995) who said many Africans would prefer to consult colleagues or friends rather visit a library or documentation centre. He argued that how does one transform such an information culture, with IT, or internet?

Is this the same ICT-culture problem that South Africans are experiencing. There might be many reasons underlying this problem. Some of these problems are lack of ICT access i.e. what Maji et al (1998) calls 'information starvation', acceptance to the level of poverty that people are living with, the flowing of ICT information to the people and resistance to change.

Do South Africans, who do not have access to ICT, see this as 'discrimination on access to information'. South African constitution addressed the right of access to information. Section 32. (1)of the consitutition says " Everyone has the right of access to

a. any information held by the state; and
b. any information that is held by another person and that is required for the exercise or protection of any rights".

This is a challenge to South African government and the ICT sector in ensuring that all South African are accessing any ICT information in this country. How a country can manage this challenged? Myers (1998) found that only a small percentage of the sub-Sahara Africa's population has access to ICT, and this denies them access the ability to realize their rights. He concludes by saying IT (with reference to computers) is thus capable of helping African citizens realise their basic rights by transmitting information on relevant issues and enhancing their knowledge in relation to new systems and programmes that can benefit the community and the nation as a whole.

There are also ICT research gaps that need to be conducted in order to understand the levels of ICT literacy in South African population. This information is of importance for the decision makers and policy developers to base their decisions on. If the issues of ICT, culture and governance can be managed, is South African economy going to reap the fruits?

ICT and education

There is no doubt that ICT is important and can be non-negotiable to a country's education system. Rathgeber (200) argue that an illiterate or poorly educated people cannot wholly absorb ICTs. From this argument, it follows that the country should afford to introduce ICT in school curriculum so that children learn how to use these technologies from an early age.

If the whole population can be ICT literate, is the country going to benefit from this? There is no argument that this could be tabled on the relationship between ICT and economy. ILO (2001) views ICT as a meta-technology revolving around life at work in the information economy, characterised by key issues such as change management practices, the nature of the employment contract, and the quality of work.

The question that has been raised is whether the information economy will be a jobs economy. Some people would argue that in a highly technological country people jobs tend to be substituted by technology. Is this true and can this be seed as affecting the country's economy negatively? Of course this can result in retrenchment and unemployment will increase and as a result economic growth will be affected. It could be argued that technology can also increase the country's economic growth

There are important lessons to learn the Hawkins (2002) writes and these are vital to be considered by policy makers, business and community leaders when planning to incorporate the internet in the educational process. These lessons are :

- Computer Labs in developing countries take time and money, but they work
- Technical support cannot be overlooked
- Non-competitive telecommunications infrastructure, policies, and regulations impede connectivity and sustainability
- Lose the wires (basically wireless technology is most effective for connecting schools in developing countries)
- Get the community involved
- Private-public sector partnerships are essential
- Link ICT and education efforts to broader education reforms
- Training, training, training (Basically that the professional development of the teachers sits at the heart of any successful technology and education programme
- Technology empowers girls
- Technology motivates students and energises classrooms

Some of these lessons are important to know, especially if the country is in the process of implementing ICT curriculum at schools.

ICT and Health

There have been arguments on HIV/AIDS challenges faced by African countries. Scientists and policy makers argue that people who do not have access to information,

do not have knowledge on HIV/AIDS issues. This is the reason why some of the African countries are spending big amounts of money on HIV/AIDS awareness programs.

Discoll's (2001) views one of the roles of ICTs being addressing the challenge of HIV/AIDS. If people can access HIV/AIDS related websites, they can benefit a lot on HIV/AIDS issues.

If we were to look at ICT as defined at the beginning of this paper, it is also important for people to have access to TVs as one of the method that can be used to deal with the challenges of HIV/AIDS.

Is there a need to spend resources on ICTs in order to benefit those that need information on HIV/AIDS? What about the relationship between ICTs as a method to address HIV/AIDS challenges, and the economy? If the country is to spend resources on ICTs to deal with HIV/AIDS, how does this improve economic status of the country?

7. Conclusion

"Are the poor still excluded from much of the world's information?" said Wresch (1996). The answer to this is "Yes".What is the world doing about this? It is important for a country to have e-ForAll in order for a society to participate in the economic activities.

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