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MEASURING THE SOCIAL AND ECONOMIC IMPACTS OF ICTs USING SURVEY DATA IN ZIMBABWE



1. The year 2010 sees the Zimbabwe National Statistical Agency (ZIMSTAT) conducting the Survey on ICT Access by Households and Use by Individuals 2009/2010. The survey is being conducted in collaboration with the Postal and Regulatory Authority of Zimbabwe (POTRAZ). The Government of Zimbabwe has progressively shown an awareness and deep appreciation of Information and Communication Technologies (ICTs). The Ministry of Information and Communication Technology (MICT) unveiled a visionary Strategic Plan (2010-2014) which guides and consolidates the priorities to transform Zimbabwe into a knowledge society, and pulls the entire nation around a single game plan for execution. The Ministry's vision is to act as a catalyst for national socio-economic growth thereby propelling Zimbabwe into a knowledge society with ubiquitous connectivity by 2015. The Ministry's mission is to transform Zimbabwe into a knowledge-based society so as to enhance the country's competitiveness in the world in order to stimulate and sustain economic growth through the systematic application and innovative use of Information and Communication Technology (ICT). The Ministry's overall functions are to:
 - Develop appropriate policies and strategies that enhance provision of information and communication technological innovations.
 - Spearhead the development of appropriate regulatory frameworks that facilitate the promotion of information and communication technology.
 - Champion and promote ICT literacy and utilization in the country in order to enhance regional and international competitiveness as a nation.
 - Promote and coordinate national ICT research and development of software, hardware and infrastructure so that it reaches best international standards.

- Develop supportive and enabling infrastructure to ensure equitable access to ICTs by all citizens including disadvantaged groups and rural communities.
 - Introduce and enforce stringent quality of service standards in the provision of ICTs.
 - Create a conducive environment for investment in the areas of ICTs through public private partnerships.
2. From the Strategic Plan document, the ICT Ministry has identified projects that can be implemented in a short space of time subject to availability of financial resources.

Some of the projects are long term but can be executed in phases.

These impactful projects are:

- Ministries websites development - Development of interactive and databases enhanced websites for all Government Ministries. This will increase visibility, interaction and communication between the Ministries and their stakeholders. The exercise will form the basis of e-Government. The Ministry of ICT has set up an inter-ministerial committee on ICTs with representatives who are ICT focal points from all government ministries.
- Communications Infrastructure - There is need to develop a communications master plan to ensure reliable and efficient communication and applications development in Zimbabwe. The project covers the entire country and will be executed in phases. Access to the Internet backbone through the current gateway has serious capacity challenges and therefore development of an optic fibre link between Harare and Mutare is important in view of connecting to the undersea cables (EASSy and SEACOM) in the Indian Ocean through Beira. An alternative route is to lay an optic fibre cable from Harare to Beitbridge for the same purpose and to facilitate fast and reliable communication between our country and South Africa. The optic fibre is a cost effective solution compared to the costly VSAT communication link.
- ICT Capacity Building and ICT Government School - The project seeks to ensure adequacy of ICT infrastructure (Local Area Networks), ICT equipment, skill upgrade and general training in ICTs. Initially, the project will establish an ICT Government School that will provide civil servants with training and exposure in ICT literacy. The project will also ensure that Ministries are adequately provided in terms of ICT facilities.
- Establishment of Pilot Information Centre - The project seeks to establish comprehensive Information Centres countrywide starting with a pilot phase at an identified site. The Information Centre will provide for several ICT related services such as Internet access, e-mail services, telephone, photocopying, printing, faxing, access to newspapers, and general secretarial and ICT related

services. The project will increase ICT penetration and provide easy access to ICT services in communities nationwide.

- Provision of computers to Ministers, Permanent Secretaries and Commissioners - To accelerate communication between Ministries at the highest level, there is need to provide capacity in terms of equipment, connectivity and training for Ministers, Deputy Ministers and Permanent Secretaries. This will form the basis of e-government and video conferencing between Ministries at these levels. In addition to providing inter-ministerial communication, this service will also provide communication between Ministries and the Prime Minister's Office and between Ministries and the President's Office. The Public Service Commission is responsible for the entire government staff, and so Commissioners must be ICT enabled so as to enhance government human resource management.
- E-Government - ICTs contribute significantly towards modern day management of government business. The government of Zimbabwe seeks to be ICT enabled and is ready to integrate ICTs into its management systems to improve service delivery and for the benefit of the citizens at large. The infrastructure for Public Finance Management System (PFMS) can be further enhanced to provide an effective e-Government platform. Government Ministries' data and information will be documented and stored in accessible databases. A data centre and archive centre will be developed to cater for comprehensive and secure Government information that will be accessed by all citizens.
- One PC per Classroom: The networked world of today is in the information age characterized by knowledge based societies. ICTs have in recent years propelled economic development for other nations through systematic and focused exploitation of the power of information and communication technologies. To this end, one of the key goals of the Ministry of ICT is to ensure the upgrading of ICT literacy and availability of ICT resources at all levels of education. However, this cannot be achieved without every child in all the schools having access to a PC and the goal of MICT is to introduce a PC for each and every classroom in all schools in Zimbabwe. The PC per classroom project is however no mean project but enhances the generous donations of PCs already made by His Excellency the President of Zimbabwe and the isolated initiatives of some schools either through former students, other organisations or the Schools Development Association (SDA). The project already has a firm foundation on which to build from. With more than 3000 schools, and a population that is more than 90% literate, this strong educational base will give an enormous amount of leverage to a country that is striving to take its rightful place in the competitive global village.
- Last mile connectivity: Once network connectivity has been established through the Communications Infrastructure Backbone to cities and major towns or business centres there will be need to establish last mile connectivity to other areas of need, for example, information centres, schools, shops, offices, houses, etc. We wish to establish a pilot phase of one site per district using wireless technologies per district.

- Establishment of National Digital Archives: In Zimbabwe, most of the record keeping system is still manual. Retrieval of such records is a mammoth task as it takes ages and sometimes documents are not even found. The Ministry of ICT intends to begin by computerizing record systems in all Ministries and government departments. It is envisaged that the project will be done in phases. The first phase will include digitizing hitherto manual records that are found in all Ministries. Interactive and searchable databases will be developed for each ministry and this will be on the local area network for the ministry. The database will contain records for the entire ministry and other information about the ministry. Ministries database will be mirrored at the National Data centre created under the e-Government project. The final phase will be to computerize the National Archives of Zimbabwe. Valuable data and information about Zimbabwe across all sectors is stored at the National Archives. To enhance its preservation, modern digital technologies must be deployed. The National Archives need computerization, data capture and secure storage facilities.
 - Information and Communication Technology (ICT) Committee - The role of ICTs in economic development and their contribution to GDP is now firmly recognised the world over. Cognisant of this enabling role of ICTs, the Ministry of ICT will establish an ICT Advisory Committee that reflects cross-sector representation. The committee will advise the Ministry and indeed Government on how Zimbabwe can systematically exploit the potential of ICTs and transform the country into an information society.
3. The following important national and international documents emphasize the need to harness ICT for national socio-economic development in order to alleviate extreme hunger and poverty and exploit the potential of ICT to uplift the standards of living of our societies:
- a) The Nziramasanga Education Commission Report (1999),
 - b) The Science and Technology Policy of 2002,
 - c) Vision 2020
 - d) World Summit on the Information Society (WSIS) Declaration of Principles and Plan of Action (Geneva 2003 and Tunis 2005),
 - e) Industrialisation Policy (2004),
 - f) The National Economic Recovery Programme (NERP) (2004-2006),
 - g) Zimbabwe Millennium Development Goals (MDGs - 2005),
 - h) The Zimbabwe National ICT Policy Framework of 2007,
 - i) Short Term Economic Recovery Programme (STERP), and

j) Public Private Partnerships (PPPs)

4. The World Summit on the Information Society (WSIS) held in Geneva (2003) and Tunis (2005) brought together governments, civil society and the business sector to discuss a broad range of subjects related to ICT for development. In the end, governments agreed on a set of commitments and actions to foster the establishment of an inclusive information society. In particular, ten targets were identified in the Geneva Plan of Action, along with numerous recommendations based on different action lines. The targets, to be achieved by 2015, are:

- To connect villages with ICTs and establish community access points.
- To connect universities, colleges, secondary schools and primary schools with ICTs.
- To connect scientific and research centres with ICTs.
- To connect public libraries, cultural centres, museums, post offices and archives with ICTs.
- To connect health centres and hospitals with ICTs.
- To connect all local and central government departments and establish websites and e-mail addresses.
- To adapt all primary and secondary school curricula to meet the challenges of the information society, taking into account national circumstances.
- To ensure that all of the world's population have access to television and radio services.
- To encourage the development of content and put in place technical conditions in order to facilitate the presence and use of all world languages on the Internet.
- To ensure that more than half the world's inhabitants have access to ICTs within their reach.

5. The year 2010 marks the midpoint between the 2005 Tunis phase of WSIS (2005) and the deadline for achieving the WSIS targets (2015), as well as the Millennium Development Goals (MDGs).

- To eradicate extreme poverty and hunger
- To achieve universal primary education
- To promote gender equality

- To reduce child mortality
 - To improve maternal health
 - To combat HIV and AIDS, Malaria and other diseases
 - To ensure environmental sustainability
 - To develop a global partnership for development
6. In this context the Survey on ICT Access by Rural Household and Use by Individuals' findings will inform policy makers on critical areas that need urgent policy intervention. The survey will be piggy-backed to the Agriculture and Livestock Survey (ALS) 2009/2010 and will cover the six geographical agricultural sectors in eight provinces of the country.
 7. It is generally agreed that data collected using an ICT household survey offer a number of advantages. First, the data provide information on access by households and use by individuals of ICTs. The data collected also provide an indication of actual use of mobile cellular phones, mobile broadband and the Internet. At the same time, it is possible to cross-tabulate user data with other variables like age, gender, education, employment, purpose of Internet use, rural-urban, technology used, etc. This will enable more detailed analysis and comparison which will prove extremely valuable for the formulation of focused and targeted policies on ICT for development.
 8. The Geneva Plan of Action called for the establishment of comparable indicators, and the Tunis Agenda for the Information Society provides suggestions related to the "periodic evaluation" of the WSIS outcomes. In particular, it acknowledges the efforts of the Partnership on Measuring ICT for Development to develop a core list of indicators and to build statistical capability in developing countries in order to monitor their evolution towards becoming information societies. It also requests the United Nations General Assembly to make an overall review of the implementation of the WSIS outcomes in 2015.

9. THE INTERNATIONAL TELECOMMUNICATIONS UNION (ITU)

ITU is a specialized UN agency that collects telecommunication data annually for over 200 economies worldwide, with some data series going back as far as 1960. These series traditionally refer to telecommunication and ICT infrastructure data, such as fixed telephone lines, mobile cellular subscribers and Internet subscribers and users. The main sources for these data are national regulatory authorities and sector ministries in charge of telecommunication/ICT that collect administrative data directly from operators and service providers. ITU collects official household and individual ICT data from NSOs. Since 2005, ITU has sent annual questionnaires to all NSOs, requesting data on the core indicators on access to, and use of, ICT by households and individuals.

10. STATUS OF ICT INFRASTRUCTURE IN ZIMBABWE

Telecommunications Infrastructure	
Mobile Switching Centres	9
Fixed Network Trunk Switches	2
Base Stations	880
International Gateways	5
Radio Terrestrial 2 Fibre Optic Links To Regional Countries	5

Access Technologies Used
GSM
WIMAX
CDMA
FIBRE
COPPER BASED TECHNOLOGIES SUCH AS ASDL

Industry Structure	
Type of Operator	Number of Licensees
PSTN	1
MOBILE	3
INTERNET ACCESS	11
PUBLIC DATA OPERATORS	2
INTERNET SERVICE PROVIDERS	17

Market Structure (Fixed Network)	
Fixed Public Operator (Net One)	1
Subscribers	386 000
Digitalized Lines	92%
Fixed Lines in Harare	50%
Fixed Lines in Rural Areas	17%
Offers Local, Regional and International Voice Telephone Services	

Market Structure (Mobile Network)			
Mobile Telephone Operators			3
Mobile Operator	ECONET	TELECEL	NET ONE
Subscriber Base	4 000 000	1 000 000	500 000
Post Paid Subscriptions			3%
Digitalized Lines			100%
ECONET offers GPRS, EDGE, and 3G Services			

Internet Service Indicators	
No. of Leased Line Subscribers	53 000
No. of Internet Dial-Up Subscribers	26 000
Mobile Broadband Subscribers	20 000
Incoming International Bandwidth	290Mbps
Outgoing International Bandwidth	215Mbps
No. of PCs (estimate)	895 000
Internet Users	1 400 000

Source: POTRAZ

11. In recent years, ICTs have gained an increasing role in national development strategies in many countries, including Zimbabwe, which have put in place ICT policies in order to develop their information and knowledge societies. Zimbabwe has launched a National ICT Strategic Plan (2010 - 2014). As a result, there is an increasing need for reliable data and indicators on the access and use of ICTs, and their impact on development. Such data and indicators help governments design and evaluate ICT policies and strategies, compare their ICT developments with those in other countries, and adopt solutions to reduce the digital divide.

12. THE SURVEY ON INFORMATION AND COMMUNICATION TECHNOLOGY (ICT) ACCESS BY RURAL HOUSEHOLDS AND USE BY INDIVIDUALS IN ZIMBABWE 2009/2010

The Survey on ICT Access by Rural Households and Use by Individuals is the first to be carried out in Zimbabwe by the Zimbabwe National Statistics Agency (ZIMSTAT) in collaboration with the Postal and Telecommunications Regulatory Authority of Zimbabwe (POTRAZ).

The objective of the survey is to collect data on household access and individual use of ICTs in order to measure the digital divide. Measuring the impact of ICT uptake is a critical input to ICT policy making. The digital divide is the gap between individuals, households, businesses and geographical areas at different socio-economic levels with regard both to their opportunities to access ICTs and to their use of the Internet for a variety of activities. The digital divide reflects various differences among and within countries in terms of access to physical infrastructure, mobile switching centres, fixed network, base stations, international gateways and fibre optic links.

13.1 Uses of the ICT Household Survey Data

The information generated is used in designing policy, planning, implementation, monitoring and evaluation of ICTs, e.g. to:

- Measure access to and use of ICTs such as radios, televisions, computers, fixed telephone, mobile cellular telephones and the Internet in rural Zimbabwe.
- Determine the mobile cellular telephone penetration, broadband and wireless Internet diffusion in rural Zimbabwe.
- Assess the developmental potential of ICTs or the extent to which the country can make use of ICTs to enhance growth and development, based on available capabilities and skills.
- Plan and evaluate ICT readiness. This reflects the level of networked infrastructure and access to ICTs.
- Monitor ICT intensity. This reflects the level of use of ICTs in the society.

- Evaluate ICT impact. This reflects the result/outcome of efficient and effective ICT use.
- Improve the availability and international comparability of statistics on access to and use of ICTs by rural households and individuals.
- Provide policy makers with a useful tool to benchmark and assess their information societies.

14. The Partnership on Measuring ICT for Development is a partnership of 10 international and regional organizations involved in ICT measurement. It was established following the Geneva phase of the World Summit on the Information Society in 2003 and officially launched in 2004. One of the main achievements of the Partnership was the identification of a core list of ICT indicators, in close consultation with other stakeholders, mainly National Statistical Offices (NSO).

14.1 Objectives of the Partnership:

- To identify a common set of core ICT indicators, to be harmonized and agreed upon internationally, that will constitute the basis for a database on ICT statistics;
- To enhance the capacities of NSOs in developing economies and to help them measure the Information Society, based on the agreed core list of indicators; and
- To develop a global database of ICT indicators and to make it available via the Internet.

14.2 CORE ICT INDICATORS

- The main purpose of the core list is to help countries that are developing ICT surveys - or adding ICT questions to existing collections - to produce high quality and internationally comparable data.

Whilst the core list is not mandatory, its use has been recommended by the United Nations Statistics Commission (UNSC). Importantly, the list is not limiting - countries will also need to respond to national policy needs and these may only be partially covered by the core list.

There are 12 ICT household indicators plus one household reference indicator. The main purpose of the core list is to assist countries to produce high quality and internationally comparable ICT household statistics.

To simplify understanding, the indicators are separated into the *access indicators* applying at the household level and the *use indicators* applying to individuals. There are 12 indicators - six on household access to ICTs and six on the use of ICTs by individuals (i.e. household members). There is also a reference indicator on access to electricity by

households. It is important to understand the difference between ICT access and ICT use as this fundamental. ICT access refers to the availability of ICTs within the home. Use of ICTs refers to use of ICTs by one or more individuals of the household, whether at home or elsewhere.

14.3 HOW THE ZIMBABWE ICT HOUSEHOLD QUESTIONNAIRE IS ORGANISED.

14.3.1 HOUSEHOLD CHARACTERISTICS:

- Household composition (HH with children and HH without children under 15)
- Household size (Number of HH members, including those outside the age scope)

14.3.2 INDIVIDUAL CHARACTERISTICS:

- Age
- Gender
- Highest education level received
- Labour force status
- Occupation

14.3.3 HOUSEHOLD ACCESS TO ICTs

Q 12 "Does the dwelling unit in which this household resides have access to electricity?"

Q 13 "What is the distance of the household to the nearest Post Office in kilometres?"

Q 14 "Did the household use postal services (ZIMPOST) to send mail/ documents during the last 12 months?"

Q 15 "How often did the household use postal services during the last 12 months?"

Q 16 "Did the household use courier services to send mail /documents during the last 12 months?"

Q 17 "How often did the household use courier services during the last 12 months?"

Q 18 "Does any member of this household have a radio at home?"

Q 19 "Does any member of this household have a television at home?"

Q 20 "Does this household have a fixed line telephone at home?"

- Q 21 "Does any member of this household have a mobile telephone at home?"
- Q 22 "Does any member of this household have a computer at home, regardless of whether it is used?"
- Q 23 "Does any member of this household have Internet access at home, regardless of whether it is used?"
- Q 24 "What type/s of Internet access services are used for Internet access at home?"
- Q 25 "What are the main reasons for the household not having Internet access at home?"
- Q 26 "Does this household face data/information security problems by using the Internet?"
- Q 27 "What are the data/information security problems the household faced by type during the last 12 months?"
- Q 28 "What data/information security measures did the household have in place by type during the last 12 months?"

Questions 13, 14, 15, 16 and 17 are about access to postal and courier services. Question 25 is about barriers that households face when they want to access the Internet. Questions 26, 27 and 28 are concerned with cyber security.

14.3.4 INDIVIDUAL USE OF ICTs

- Q 29 "Has (name) used a mobile cellular telephone in the last 12 months?"
- Q 30 "Have you used a computer from any location in the last 12 months?"
- Q 31 "Have you used the Internet from any location in the last 12 months?"
- Q 32 "Where did you use the Internet in the last 12 months?" (*Allow multiple responses*)
- Q 33 "How often did you typically use the Internet during the last 12 months?" (From any location)
- Q 34 "For which of the following activities did you use the Internet for private purposes in the last 12 months (from any location)" (*Allow multiple responses*).
- Q 35 "What are the reasons why (name) did not use the Internet in the last 12 months?" (*Allow multiple responses*)

Question 35 is concerned with barriers that individuals face in trying to use the Internet.

15. CAPACITY BUILDING

The Partnership on Measuring ICT for Development, launched by the international community, is a multi-stakeholder initiative to improve the availability and quality of ICT data and indicators, particularly in developing countries. The (ITU) and (UNCTAD) are playing a leading role in the Partnership in developing internationally comparable ICT indicators, establishing an ICT global database, organizing workshops and seminars on ICT measurement, and helping countries through technical assistance projects. ZIMSTAT was represented at the 7th World Telecommunications/ICT Indicators Meeting in Cairo, 3-5 March 2009 and the COMESA 2nd Meeting of the Working Group on e-Readiness Assessment and Information Society Measurement, 3-6 March 2009. Two statisticians from ZIMSTAT also attended the Addis Ababa "Training Course on Measuring ICT Access and Use in Households and Businesses from 13-24 July 2009.

16. CONCLUSION

THE COMMON MARKET FOR EASTERN AND SOUTHERN AFRICA (COMESA) E- READINESS INITIATIVES

16.1 OBJECTIVE OF THE 2ND MEETING OF THE WORKING GROUP ON E-READINESS ASSESSMENT AND INFORMATION SOCIETY MEASUREMENT.

The objective of the working group was to review background documents on e-readiness assessment and information society measurement, agree on frameworks for harmonized national and regional indicators and indices and develop a roadmap for implementation of ICT e-readiness assessment, benchmarking and information society measurement in Eastern and Southern Africa (ESA). The activities of the working group were restricted to e-readiness assessment and information society measurement issues in the ESA region.

16.2 MEMBERSHIP OF THE WORKING GROUP

Membership of the Working Group included one representative from each of the following member states: Seychelles, Mauritius, Uganda, Madagascar, Zambia, Kenya, Malawi and Zimbabwe. The selection was based on members' contribution to the e-readiness assessment and information society measurement and monitoring framework during the Nairobi workshop.

16.3 TASKS OF THE WORKING GROUP

Review background documents produced by a consultant and provide input for their finalization: In SCAN-ICT Phase II, UNECA developed a comprehensive framework for the development of information society measurement indicators. A toolkit was built on the methodology developed as part of the Scan-ICT Phase I pilot project. It incorporates a framework for the development of suitable indicators for assessing the status of the development, deployment and use of ICTs in African countries. The methodology is based on the so-called 'CUT' model which classifies ICT4D indicators into three categories:

- Capacity indicators: targeted at measuring the level and the extent of development and deployment of ICT infrastructure and related resources;
- Usage indicators: aimed at assessing and measuring the extent of use of the ICT infrastructure and related resources by households, business and government entities; and
- Transformation or impact indicators: indicators targeted at measuring the social and economic impact of ICT infrastructure and use within the economy and society.

Prepared by

DOMINIC TAFIRENYIKA

ZIMBABWE NATIONAL STATISTICS AGENCY (ZIMSTAT)