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Towards effective e-governance: The delivery of public services through local e-content

Global Summary Report



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Preface

This report presents key findings from a research study conducted by the Commonwealth Telecommunications Organization (CTO) on behalf of Nokia Siemens Networks and Nokia. The research was undertaken in Ghana, India and South Africa to gather evidence about the demand and supply factors affecting the provision of public services through local e-content. For the purposes of the study, local e-content was defined as content created by governments, or their appointed agents, which is supplied to citizens using ICTs such as the radio and mobile devices.

The research contends that improved understanding of the demand and supply factors concerning public service delivery through ICTs will make e-governance projects in developing countries more effective and therefore improve efforts to achieve the Millennium Development Goals.

The research findings are a result of qualitative and quantitative research conducted between September and November 2007 with policymakers, regulators, representatives of the private sector and civil society, as well as users of telecommunications services.

The key findings within this report relate to three important concerns for those focused on improving public service delivery through ICTs:

1. Which ICT is most effective for stimulating the demand and supply of public services through local e-content?
2. What roles must policymakers, regulators, the private sector and civil society play in such delivery?
3. What are the priorities and attitudes of users with regard to the implementation of ICTs, information and e-content services?

Executive summary

The governments of Ghana, India and South Africa have developed e-governance plans in which the provision of public services through local e-content is the ultimate goal. However, they are taking different approaches to meet the objective. The governments of Ghana and South Africa have prioritized the implementation of ICT infrastructure and processes for effective government-to-government (G2G) e-governance. In contrast, the government of India has adopted a two-pronged strategy, simultaneously implementing G2G ICT infrastructure and processes while attempting to provide public services to citizens on a wide scale. Despite the different priorities and approaches, the three governments believe shared access points and broadband Internet will be effective for stimulating the demand and supply of public services.

This report indicates that, although all technologies should be considered, mobile devices have the potential to be the most effective technology for stimulating the demand and supply of public services through local e-content in a broad range of contexts. The large and increasing subscriber base of mobile devices, the way they enable users to demand services, and the way they are giving an increasing number of users an "Internet experience" are important. In addition, the private sector is already delivering services over mobile devices, while device convergence means mobile devices now incorporate many of highly effective technologies such as Internet and radio. The promise of mobile devices is unequivocal.

However, not many of the key stakeholders consulted recognized the benefits of mobile communications. Moreover, out of more than 900 end users surveyed, only half felt it was important to receive e-content services through a mobile device or the Internet. This can partly be attributed to low awareness of the benefits of mobile communications, resulting from a lack of socially-orientated e-content currently delivered through mobile devices. There is clearly a need to educate people about the potential of mobile communications to stimulate the demand and supply of public services. Of course, practical examples help increase understanding, and some can be found in each country, but these need to be scaled-up if they are to raise awareness about the ability of mobile devices to be more than tools for talking.

This report argues that all stakeholders play an important role in ensuring that ICTs, in particular mobile devices, are used to stimulate the demand and supply of services. Multi-stakeholder partnerships joining policymakers, the private sector and civil society are required to exploit the expertise of all and create synergies. Yet, while collaborative relationships between all key stakeholders are important, this report finds that the relationship between government and the private sector matters most. Government possesses the content, while the private sector owns the expertise and infrastructure to develop and disseminate content as a service.

While all three governments recognize the importance of PPPs, the Indian government has gone furthest in utilizing them. It has mandated a private sector organization to manage its entire national e-governance project and created a clearly defined framework for other private sector organizations to join them in partnership. The strength of India's PPPs holds much promise and is an important reason why it has been able to take a two-pronged approach.

The needs of users lie at the heart of any initiative to improve the demand and supply of public services through local e-content. Their requirements with respect to information and e-content services should dictate supply. Users have many information needs and this report indicates that the most important are related to news, health, education and training. They also have priorities in terms of the e-content services they would like to receive through the mobile device and Internet, and these are related to health, education and income-generating activities. In many cases, users are willing to pay to receive these services. Understandably, many policy makers consulted were concerned with developing sustainable services. These priority types of information and e-content services provide an indication of where efforts should be focused.

Currently, few users are using mobile devices and the Internet to access the services and information they need. However, while being a challenge, this must be viewed as an untapped opportunity by policymakers, the private sector and civil society.

Objectives and methodology

The primary purpose of the research project was to:

- Enhance the reach of public services through ICTs in general and wireless channels in particular.

To accomplish the primary purpose, three main research objectives had to be fulfilled:

- Scan selected markets to identify ICTs currently being used to meet local e-content needs and evaluate their effectiveness according to criteria.
- Identify and assess the roles and responsibilities of key stakeholders (NGOs, the public sector, users and solutions providers) in stimulating the demand and supply of public services through ICTs in general and wireless channels in particular.
- Understand end user priorities and attitudes regarding information relating to various aspects of livelihoods and to the delivery of associated e-content services.

A range of qualitative and quantitative research techniques were used:

Qualitative:

- Literature review
- Telephone interviews with key stakeholders (policy makers, regulators, private sector and civil society)
- Face-to-face interviews with key stakeholders
- In-country focus groups (1 per country) with key stakeholders

Quantitative:

- Over 900 face-to-face interviews with rural and urban users of telecommunication services between October and November 2007.

The research countries

Ghana, India, and South Africa were chosen for research because of their differences and similarities. These enabled the team to draw robust conclusions by comparing and contrasting key findings between countries.

In terms of similarities, the governments of Ghana, India, and South Africa have all emphasized the use of ICTs for socio-economic development. Each has developed an e-governance plan in which the provision of public services through ICTs is the goal and are ranked 'medium' in the Human Development Index (HDI). Importantly, they have all witnessed huge growth in the use of mobile communications in the last five years.¹⁾

The countries' populations are very different. India's is 1.3 billion, while South Africa and Ghana's stand at 47.9 million and 22.5 million respectively. Mobile penetration figures also differ greatly. South Africa's is 90%, Ghana's is 30% and India a comparatively low 16%.²⁾

¹⁾ United Nations Development Program (UNDP). 2007. Human Development Report 2007, Fighting Climate Change: Human Solidarity in a Divided World

²⁾ International Telecommunications Union (ITU)

Types of e-governance

Government-to-Government (G2G) – the use of ICTs to improve or facilitate internal processes between government departments, ministries or authorities. This is seen as a prerequisite for delivery of public services through ICTs.

Government-to-Business (G2B) – the use of ICTs to deliver government services to the private sector.

Government-to-Citizen (G2C) – the use of ICTs to deliver government services to citizens. This is considered the ultimate objective of most e-governance initiatives.

National e-governance plans

E-governance can be described as the way in which the public sector uses ICTs to improve accountability, transparency, effectiveness, public service delivery and citizen participation in decision-making.

The governments of Ghana, South Africa and India have developed e-governance plans that are intended to result in the successful delivery of public services to citizens. Yet, they have adopted different approaches to meet this goal. Consequently, the governments have given stimulating the demand and supply of public services through local e-content a different level of priority.

Ghana and South Africa have prioritized Government-to-Government e-governance (G2G) over Government-to-Citizens (G2C) e-governance. Developing robust G2G ICT infrastructure and processes may improve the chances of both countries' developing successful G2C services in the future. Previous analysis of G2G and G2C e-governance projects in developing countries indicates that more than 85 % fail due to gaps in design and reality, which can result from poor G2G.³⁾ Despite both countries' focus on G2G, a small number of services have been rolled out. Initiatives such as the South African Revenue Service's e-filing service provide examples of how governments can prioritize improving the backend and still deliver selected services through ICTs.

In contrast with Ghana and South Africa, the Government of India is taking a two-pronged approach. Its National e-Governance Plan (NeGP) has led it to simultaneously implement effective G2G processes and ICT infrastructure and attempt to roll out services on a wide scale. As a result, the Government of India has made stimulating the demand and supply of public services, through local e-content, its highest priority.

The evidence from India suggests that, with an effective strategy and strong Public Private Partnerships (PPPs), governments can prioritize stimulating the demand and supply of public services, while simultaneously improving backend infrastructure and procedures to produce effective G2G.

“The problem is sorting out the backend so government can provide those services. We believe we need to bed that down first and make sure we can integrate processes so that it will become easier to deliver public services through local e-content.”

Mr Moses Mtimunye,
Acting Head Strategic Services,
South African Information Technology
Agency (SITA)

³⁾ R. Heeks, 2001, Understanding e-Governance for Development

“Radio is the best ICT because of the poor electricity supply in Ghana at the moment. When I was doing research in the Sogamang area, the district Chief Executive told me how important the radio was because people who don’t even have electricity can still receive information.”

Ms. Johann Awotwi,
Director, e-governance Centre,
Ghana

“[...] Traditionally, the Telecoms industry has been a monopoly of the government. Now this has resulted in a huge amount of copper in the country, but the monopolies are not allowing the loops to be opened up for other carriers to ride on and deliver the services.”

Mr. Vinnie Metha,
Executive Director,
Manufacturers Association for
Information Technology (MAIT),
India

The most effective ICT

The majority of focus group participants initially suggested radio would be the most effective ICT for stimulating the demand and supply of public services. Primary reasons were:

- it has the widest reach of any ICT and therefore the largest number of potential users
- it delivers content in local languages
- it provides content that illiterate users can use
- it requires small amounts of electricity
- it is the traditional ICT for supply and demand of public information so governments and users have the capacity to use it.

Reach, penetration and less intensive use of electricity mean that radio can play an important role in the provision of public services. However, there were stakeholders who questioned its effectiveness. Justifiably, they argued that radio is not suitable for stimulating the demand and supply of public services through local e-content because, as a one-way technology, it does not give users the interactivity required to demand services.

After initial discussions about the effectiveness of radio, in which its limitations were acknowledged, key stakeholders were asked to consider three determinants of effectiveness and indicate which technology they believed was most effective. Questions asked were, does the ICT:

1. Provide interactive services and two-way communication?
2. Support delivery of public services through local e-content to large user bases?
3. Meet local e-content needs in a wide range of formats, to overcome issues such as illiteracy, blindness or deafness?

After considering the determinants, stakeholder discussions focused on broadband Internet and the mobile device.

The effectiveness of broadband

The arguments for why the Internet – specifically, broadband – could be the most effective include the way it enables local e-content delivery in a range of formats (text, audio and video) – and enables users to specify the local e-content they want. Support for broadband was pronounced in India – in part, because the Government of India declared 2007 the year of broadband and has made broadband the pillar of its e-governance plan. Ghanaian and South African stakeholders stressed that broadband has the potential to be the most effective, but the small number of users and slow growth in usage means it will not be an effective tool for stimulating the demand and supply of public services in the short to medium term.

The notion that broadband promises more for the future than it can deliver at present appears to be justified when one considers the low number of users in each country, and recent growth figures for Internet usage.⁴⁾

Key stakeholders in each country felt low broadband usage may be attributed, to an extent, to “bottlenecks” caused by each government’s ownership of the incumbent operator and the way it had stifled competition. The bottlenecks identified by stakeholders include:

- **The high cost of broadband**
The cost of a broadband connection to the home in Ghana, for example, is prohibitively high for most citizens. However, examples of relatively low prices for entry-level broadband packages in India and South Africa suggests high prices may be less of a barrier.
- **High cost of international bandwidth**
The cost of international bandwidth was not mentioned in India. However, in Ghana and South Africa, it was cited as a key reason for high broadband prices.

⁴⁾ In Ghana 2.7% of the population are Internet users, India 5.44 per cent and South Africa 10.75% (ITU)

“Another factor restricting Internet is the cost of the end user terminal, the PC. Despite of the best efforts of the government, they have to come out with a cheaper terminal for the user.”

Mr Goyal,
Chairman, Telecom Equipment
Manufactures Association
(TEMA), India

- **Failure to unbundle local loops**

The continued failure to unbundle copper local loops controlled by incumbent operators has prevented competition, service roll-out and price reductions.

- **Low PC penetration**

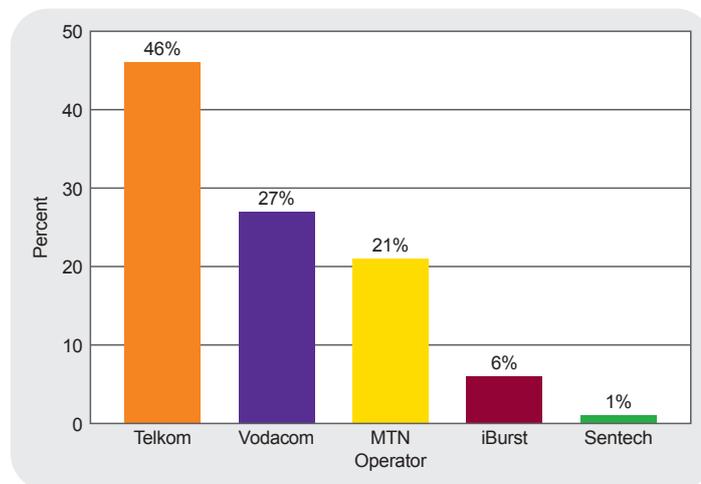
Stakeholders suggested that the PC is the “key terminal device” for accessing broadband services. However, numbers in each country remain low in comparison to population despite falling costs of PCs over the last 5 years. In 2005, 0.5% of Ghanaians owned a PC, while in India and South Africa the figures were 1.6% and 8.5% respectively.⁵⁾

Overcoming the bottlenecks to broadband

Converged Licensing Regime

The implementation of the Electronic Communication Act (ECA) in South Africa (July 2005) is expected to resolve some of the bottlenecks to broadband by introducing a single, platform-neutral licensing regime. It will take some time to see the full effects of the ECA on the growth of broadband usage in South Africa. However, early indications suggest that mobile operators will become the main providers of broadband services in South Africa due to faster roll out of services on 3G networks and cheaper costs than the incumbent.⁶⁾ By 2006, South Africa's two main mobile providers, Vodacom and MTN, had taken advantage of the ECA to assume a combined market share that is larger than that of Telkom South Africa.

Figure 1. South African Broadband Market Share
Source: Link Centre – South African
Telecommunications Sector Performance
Review 2006



“In today's world there is nothing like teledensity for voice, you must work to increase teledensity for broadband. If you want to do broadband in the same way you must actually provide a cyber cafe with broadband facility in the villages – and the CSC is nothing more than this.”

Mr Ashis Sanyal,
Senior Director, e-Governance,
Department of IT, India

⁵⁾ World Bank, 2008, Information Technology Statistics

⁶⁾ Telkom South Africa's entry level broadband package cost \$21.96 while Vodacom's cost \$12.73 (based on ZAR to US\$ exchange rate on January 7th 2007)

“In terms of the take up of services, the strategy to aggregate access and usage through the rolling-out of cyber labs and telecentres has not been successful.”

South Africa ICT Sector Performance Review 2006, Link Centre

Shared access: the answer to broadband bottlenecks?

Each government is in the process of increasing shared access points, which provide users with access to broadband through PCs and PC like terminals. The Government of India is introducing 100,000 Community Services Centres (CSCs), which will act as the front end for the public provision of services. The Government of Ghana is in the process of introducing 220 Community Information Centres (CICs) as part of its efforts to achieve universal access. The Government of South Africa has introduced around 500 Multipurpose Community Centres, 98 Tusong Centres, and 700 Public Information Terminals (PITs) and is working to ensure all provide access to broadband Internet and services.

Despite each government's belief in shared access points their recent record of success indicates they may not provide a holistic answer to poor access and low ICT usage. In South Africa, telecentres and cyberlabs implemented as part of the universal service strategy were considered expensive and dysfunctional and are under utilized.⁷⁾ In Ghana, the fall in the number of commercial Internet cafes, from 2,000 to 1,200 between 2003 and 2006, has been used as evidence of unsustainability.⁸⁾

Shared access points have an important role to play in stimulating the demand and supply of services. However, the right range of services must be found to generate the levels of usage required to make them sustainable.

The effectiveness of mobile devices

A minority of stakeholders suggested mobile devices could be the most effective technology for stimulating the demand and supply of public services. Surprisingly, most of these were from government and civil society and not the private sector. This suggests many private sector stakeholders still see mobile devices as tools for voice and commercial value added services such as ring tones. Reasons given for the effectiveness of mobile devices include:

- **Number of users and increasing penetration**
More people than ever have ownership of mobile devices capable of accessing e-services and e-content.
- **Mobiles offer increasing interactivity**
Stakeholders provided examples of the way in which mobile users demand commercial content and influence the creation and supply of content.
- **Mobiles connecting people to the Internet**
In Ghana, urban users are using mobiles to receive an “Internet experience” through WAP services provided over GPRS. In South Africa, 3G networks provided by Vodacom and MTN enable a number of relatively rich users in urban areas to have a better Internet experience with mobile devices than most had through PCs.
- **Mobility**
The mobile device enables people to access content wherever they are. It reduces the opportunity costs associated with traveling or corrupt practices.
- **Inclusiveness**
The mobile device is increasing the inclusion of the most marginalized people in society, and could enable them to access public services currently out of their reach. In India, Tata Indicom's Mobile Micro Money (M³) is an example of the mobile increasing inclusion. The service, developed in collaboration with Microfinance Institutions (MFIs), enables MFI agents who work in rural areas to provide updates on new and existing accounts using mobile device.

“[...] the mobile telephone is the best way for people to interact, to demand information and send information upstream. If I take the recent Idols programme as an example, within half a day they had more than 100,000 people submitting information. I don't think there is any other channel, even websites, which generate that many hits.”

Mr Kobus Roux,
Meraka Institute, South Africa

⁷⁾ Link Centre, 2006, – South African Telecommunications Sector Performance Review

⁸⁾ Balancing Act, 2007, African Telecoms and Internet Markets – Part 1: West Africa

“At present the bandwidth offered by mobile is a problem. [...] from the mobile communication side, HSPA and any version beyond that holds promise.”

Mr Lav Gupta,
Advisor, Telecommunications
Regulatory Authority of India

Despite acknowledging the benefits of mobile devices, some stakeholders remained uncertain about their potential effectiveness. The reasons for the uncertainty include:

- **Bandwidth and download speeds**
- **High cost of Internet over mobile**

In Ghana, for example, it can cost a user \$532.48 to download one gigabyte of data over one operator’s GPRS network. In South Africa, however, the advent of 3G networks means that users with EDGE and HSDPA enabled devices can access broadband Internet at lower cost and at a higher speed than the incumbent operator’s entry-level broadband packages provided through ADSL.

- **Limited functionality in entry-level handsets**

Most mobile users have entry-level handsets that facilitate voice and SMS, but do not have the functionality to provide an Internet experience. However, projections of mobile device ownership in South Africa suggests the structure of phone ownership changes as mobile markets move towards maturity in terms of penetration and network capacity.

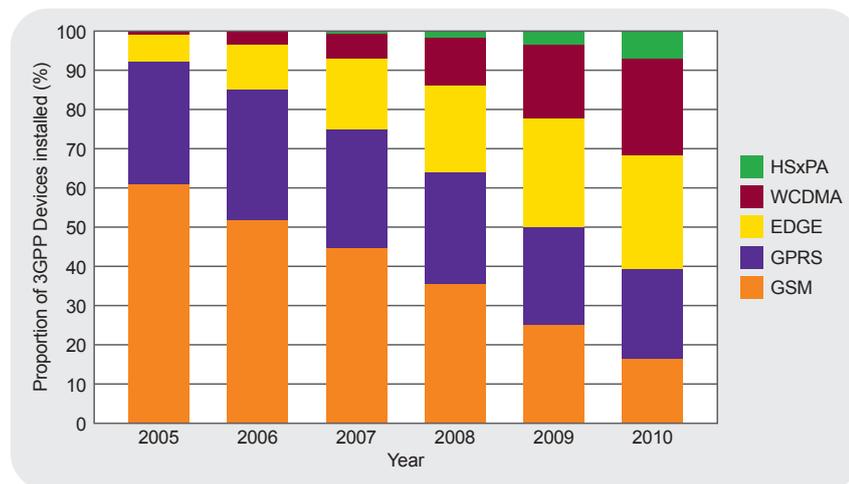


Figure 2. Changing structure of South African mobile ownership
Source: BMI-TechKnowledge Group

“ [...] People are still talking about it but there is no concrete plan to say how we can utilise cell phones for people to access government services.”

Ms. Ntombi Masakasi,
Manager for Local Content, Presidential
National Commission PNC, South Africa

What is the most effective technology?

Clearly, all technologies have a role to play in efforts to stimulate the demand and supply of public services. The benefits of each technology highlight why it is important that context dictates which technology is used. As one key stakeholder said, “Context is King”.

Yet, in spite of the merits of radio, the technologies that can truly be considered as most effective are the Internet and mobile device, as they offer the interactivity that will ensure users can demand and receive the public services they want and need.

Shared access points offer much promise for improving access to broadband, but uncertainty over the business model and, therefore, sustainability means they may not provide a holistic answer.

Mobile devices have the potential to be the most effective ICT. The large and increasing number of users, the growing amount of content / value added services provided by the private sector and the fact that the mobile devices are being used to give people an Internet experience justify why more must be done to realize their potential. Furthermore, there are pertinent benefits to be offered by mobile device “convergence” – the development of mobile devices to become more than complimentary ICTs to radio and the PC, but in fact provide access to these technologies. Increasingly, the mobile device is equipped with a radio, camera, music and video player and PC functionality. Even many entry-level handsets available today are equipped with features that make other ICTs unnecessary.

Yet, despite its potential, there is a lack of awareness about the benefits of mobile communications for public service delivery. The fact that few key stakeholders – even those working in the mobile industry – cited mobile devices as the most effective method, clearly indicates that efforts are required by all stakeholders to increase understanding of how mobile communications can stimulate the demand and supply of public services.

“A year ago, when we started this project of rolling out 100,000 common service centres in the country, we started off with the assumption that Content is King. Now we say Context is King!”

Mr Kedar Dash,
Senior Web Developer,
OneWorld South Asia, India

The role of stakeholders

Stimulating the demand and supply of public services through ICTs will require key stakeholders to work together in partnership. For these multi-stakeholder partnerships to be effective, it is important to identify the roles and responsibilities that policymakers, regulators, the private sector and civil society must fulfill. Doing so will help create the required synergies.

Key stakeholders are largely aware of the roles and responsibilities they should be fulfilling and these are largely in keeping with their current remit and expertise. For example, government must provide an enabling environment for increasing access to the ICT that will deliver services, while operators must take advantage of the enabling environment to increase access.

Table 1 below summarizes the key roles and responsibilities that stakeholders must fulfill.

Table 1. Stakeholders' identified roles and responsibilities

Government	<ol style="list-style-type: none"> 1. Provide an enabling policy environment 2. Political commitment to deliver public services through ICTs, and wireless channels in particular 3. Establish consultative processes 4. Establish Public Private Partnerships 5. Legislate for the production of digital content
Regulator	<ol style="list-style-type: none"> 1. Provide an enabling regulatory environment for increasing access to ICTs
Private Sector	<ol style="list-style-type: none"> 1. Increase access to ICTs 2. Enhance the capacity of mobile networks 3. Provide platforms for public services to be delivered through local e-content 4. Identify markets for services 5. Create/Convert content for dissemination as public services 6. Assist government in PPPs 7. Produce higher specification handset at lower cost
Civil Society	<ol style="list-style-type: none"> 1. Identify stakeholders' needs 2. Raising user awareness and demand for public services through ICTs 3. Providing services as government infomediaries

“Government must take the lead in stimulating the demand and supply of public service through local e-content through the development of policy, but policy development must be done in a consultative process so that the demands of stakeholders are taken into account.”

Mr Issah Yahaya,
Director of Policy and Planning,
Ministry of Communications, Ghana

While all stakeholders have an important role to play, the relationship between government and the private sector is the most important; it is government that owns the content and the private sector that possesses the knowledge and expertise to convert it into e-content and deliver it as a public service.

There is consensus amongst stakeholders that governments must lead the way in stimulating the demand and supply of public services through ICTs. It is important that governments clearly define the roles they would like stakeholders to play and establish the frameworks that will facilitate strong public private partnerships and consultation. In Ghana and South Africa, private sector stakeholders said there was uncertainty about who should drive the process; a clear impediment to the improvement of public service delivery.

Unfortunately, in many cases key stakeholders are only partially fulfilling their roles and responsibilities. For example, while each government has shown a political commitment to deliver public services through ICTs, none have fully considered how they will use mobile devices to do so.

Table 2 identifies some actions that should be undertaken by stakeholders in order to completely fulfill the roles and responsibilities required to stimulate the demand and supply of services through ICT channels.

Table 2. Identified actions for stakeholders, short to medium, medium and long term

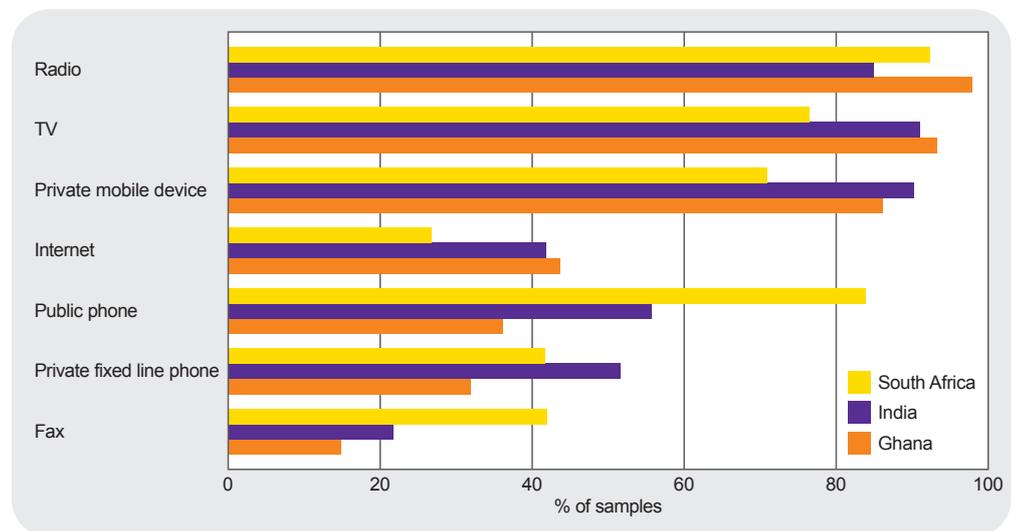
Time Frame	Government	Private Sector	Regulator	Civil Society
Short to Medium Term (6 Months to 1 year)	<ul style="list-style-type: none"> • Fully explore the use of mobile telephony communications for public service delivery • Assess and rationalize current decision making processes for creation of enabling environment • Evaluate and where necessary improve consultative processes 	<ul style="list-style-type: none"> • Improve revenue share for content producers (mobile operators) • Make platforms available for public service delivery (mobile operators) • Approach government with innovative ideas for public service delivery 	<ul style="list-style-type: none"> • Re-evaluate role in stimulating the demand and supply of services • Assess benefits of introducing quotas for local e-content 	<ul style="list-style-type: none"> • Improve collaboration between CSOs in order to effectively articulate user needs to government • Increase knowledge of services which can be supplied via mobile devices
Medium to Long Term (1 year to 3 years)	<ul style="list-style-type: none"> • Establish strong framework for PPPs in which role of the private sector is well defined • Legislate and incentivise for the production of digital content. • Increases resource for training of content producers 	<ul style="list-style-type: none"> • Enter into effective PPPs with government • Identify markets and develop services that can be supplied sustainably • Upgrade networks in urban and rural areas for additional data demands 	<ul style="list-style-type: none"> • Increase scope and improve efficiency of Universal Service Funds to increase rural access for voice and data 	<ul style="list-style-type: none"> • Raise awareness and demand for e-content services amongst users • Provide services as on behalf of government
Long Term (3 Years +)	<ul style="list-style-type: none"> • Privatize incumbent operators, when necessary, to improve competition 	<ul style="list-style-type: none"> • Ensure all users at bottom of pyramid have devices that can take appropriate advantage of upgraded networks (Handset manufacturers) 		<ul style="list-style-type: none"> • Provide impact assessments on efforts

Key findings from user surveys

During October and November 2007, over three hundred face-to-face interviews were carried out in each research country. Samples were split equally between urban and rural users of telecommunications services. In addition to assessing how respondents currently use ICTs, the intention was to understand users' priorities and attitudes regarding information relating to their livelihoods and the delivery of associated e-content services. The samples represent more intensive users of communications services, and e-content in particular, and are not representative of national populations.

Most commonly used ICTs

Figure 3. Proportion of respondents using ICTs (within last year)
(Ghana N = 326; India N = 323;
South Africa N = 313)

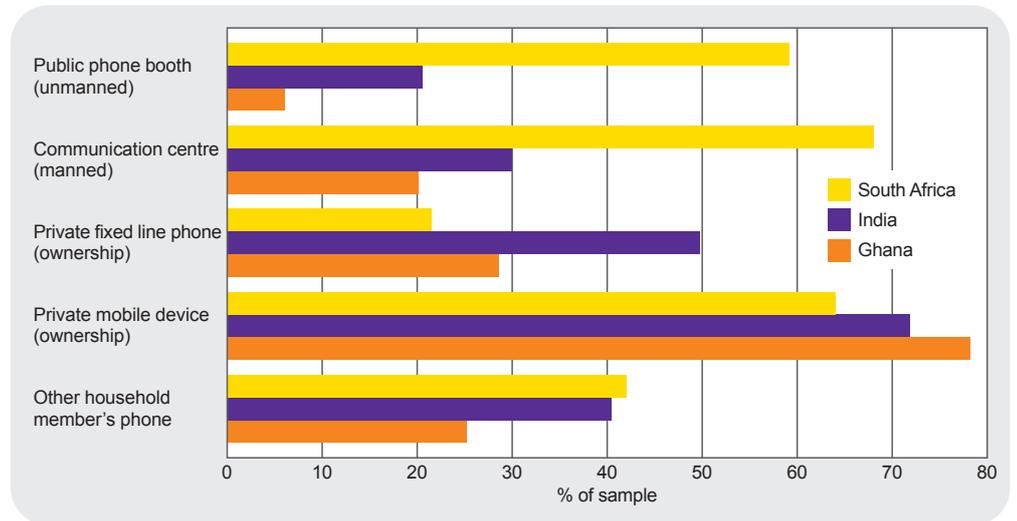


The belief that a range of ICTs should be considered when attempting to stimulate the demand and supply of services is supported by the fact that respondents use a wide range of ICTs. The most commonly used ICTs in Ghana and South Africa is the radio, while in India it is the TV. Ownership of mobile devices is widespread amongst the respondents (Ghana 78.2%, India 71.6% and South Africa 63.9%) and this is reflected in the number of people who had used a private mobile device in the last three months. Indeed, the level of device ownership indicates it is no longer restricted to high status groups.

Among people who do not currently own ICTs such as the Internet, fixed line phone and mobile, the intention to acquire a mobile device is strongest. Also, in all countries, non-owners' intention to get an Internet connection is stronger than their intention to get a fixed line phone, implying that there may be a market for wireless Internet.

Access to phones

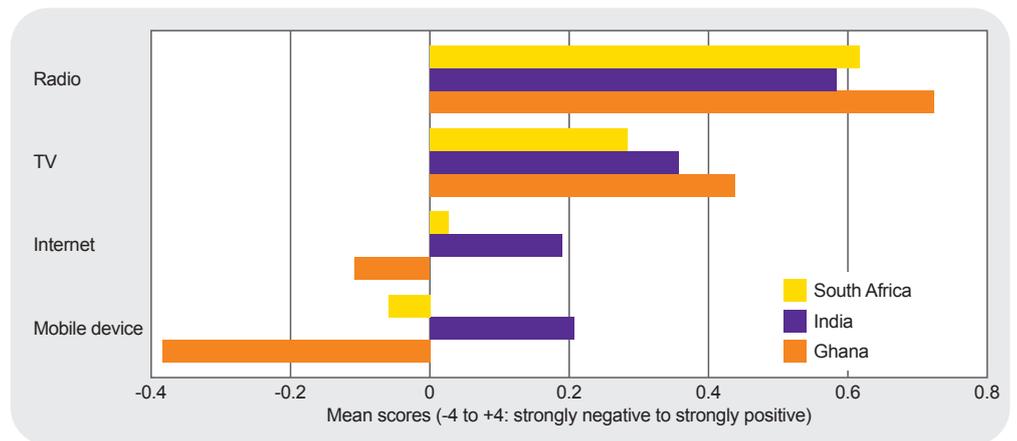
Figure 4. Means of access to phones (Ghana N = 326; India N = 323; South Africa N = 313)



Despite the high levels of mobile device ownership, respondents access phones in number of ways. The data indicates that people use public phones far more in South Africa and India than in Ghana, where there are not as many public telephones. The implication for e-content provision is that services should be accessible via mobile devices and public access points.

User attitudes towards ICTs

Figure 5. Overall attitudes towards ICTs (means) (Ghana N = 272–318; India N = 323; South Africa N = 307–313)

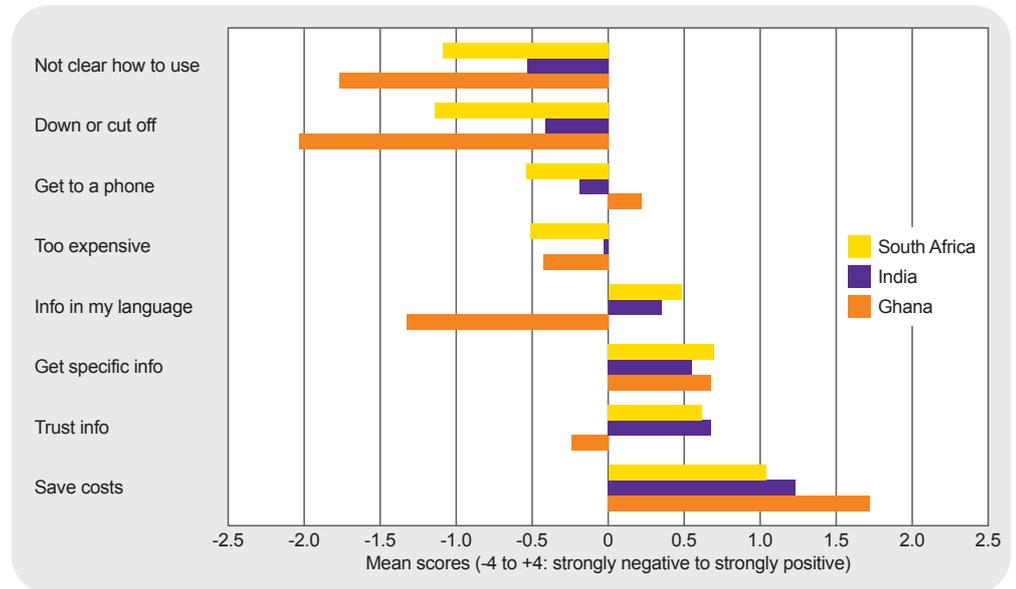


User attitudes to particular ICTs may influence the extent to which they use them to demand services. An assessment of users' attitudes to things such as trust in the information received through the ICT, quality of service and the amount of content it provides in local languages indicate that attitudes towards the radio and TV are most positive.⁹⁾ Attitudes towards the mobile device are most negative and can largely be attributed to poor quality of service and expense.

⁹⁾ Attitudes scores are weighted according to the perceived importance of the issue.

Attitudes towards the mobile devices

Figure 6. Attitudes towards mobile device
(mean scores: Ghana N = 326, India N = 323,
South African N = 313)



Despite negative attitudes toward mobile devices overall, users in all three countries are positive about their ability to provide the specific information people want and to save costs. The consistently negative attitudes across the countries concerning ease of use, quality of service and expense highlight some key issue stakeholders must tackle when trying to stimulate demand for services through mobile devices.

Priority types of information

Understanding what types of information are most important to people is critical if sustainable services are to be developed. The research indicates the most important types of information to users are:

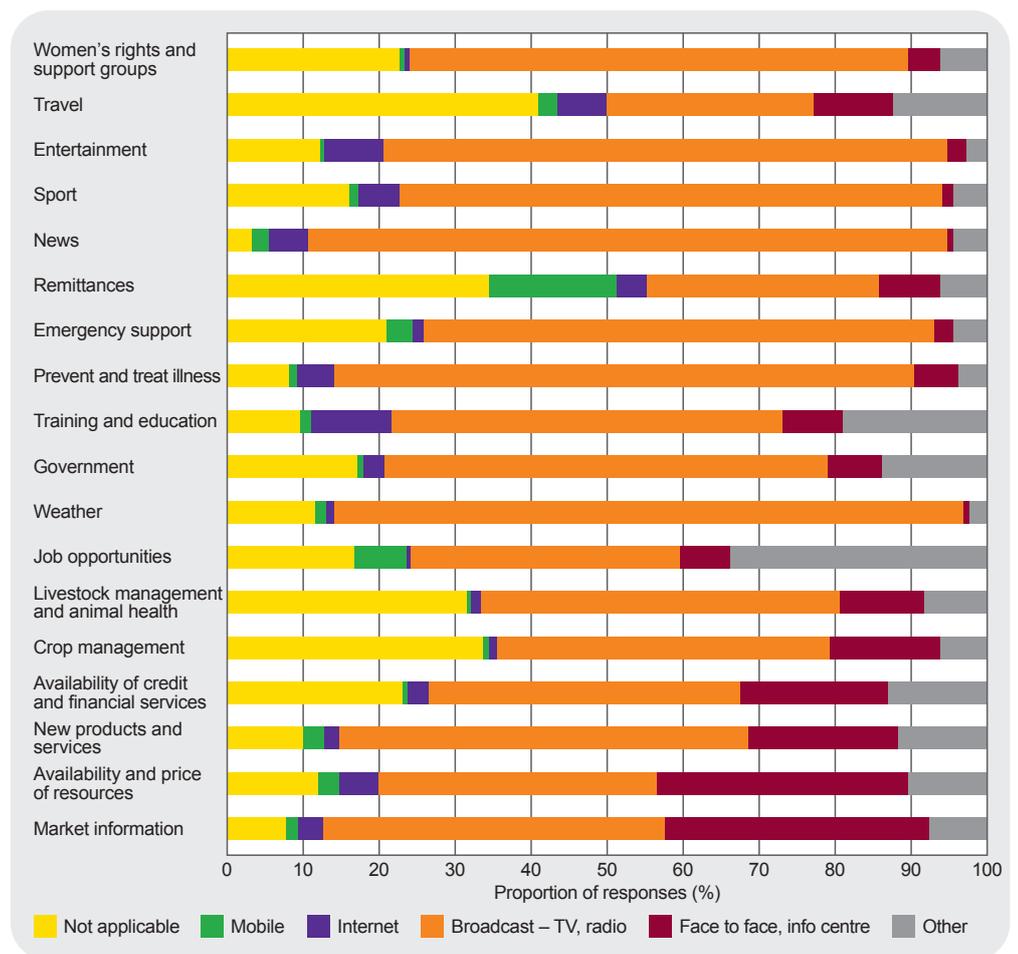
- News (local and international).
- Health – how to prevent and treat illness and diseases.
- Education – education and training opportunities.
- Income generation – job opportunities; market information; availability and price of resources; information on new products and services.

This indicates generic areas in which e-content services should be developed.

ICTs used for accessing information

Radio and TV are the most commonly used ICT for accessing information in all three research countries. Radio is currently the most important channel, but TV is not far behind. It is likely that the impact of TV is restricted simply by signal coverage. In each country, mobile devices are less commonly used. In Ghana, mobile devices are most used for accessing information on remittances and job opportunities. In South Africa they are used mostly for emergency support and remittances and in India they are important for emergency support.

Figure 7. Channels used as main means of accessing information types (example of Ghana)

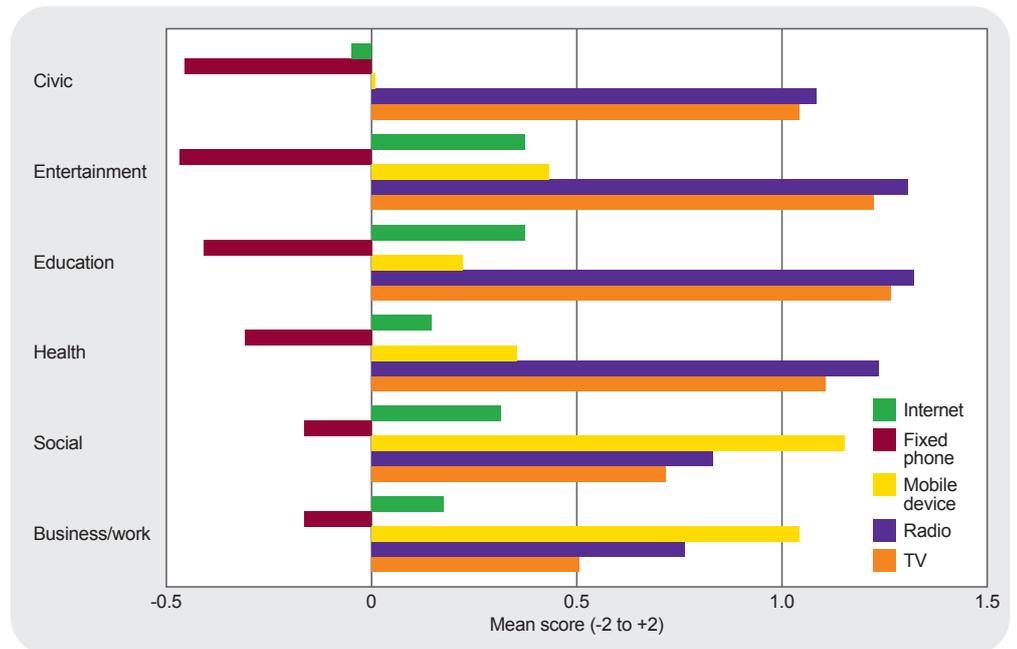


Interestingly, people have confidence in information that is important to them which suggests they also have faith in the ICT they use to access that information. That being said, the research indicates that users have least confidence in their most important types of information – news and information related to health, education and income generation. This suggests they have less faith in the ICT they use to access that information and may be willing to switch to other ICTs.

ICTs and livelihoods

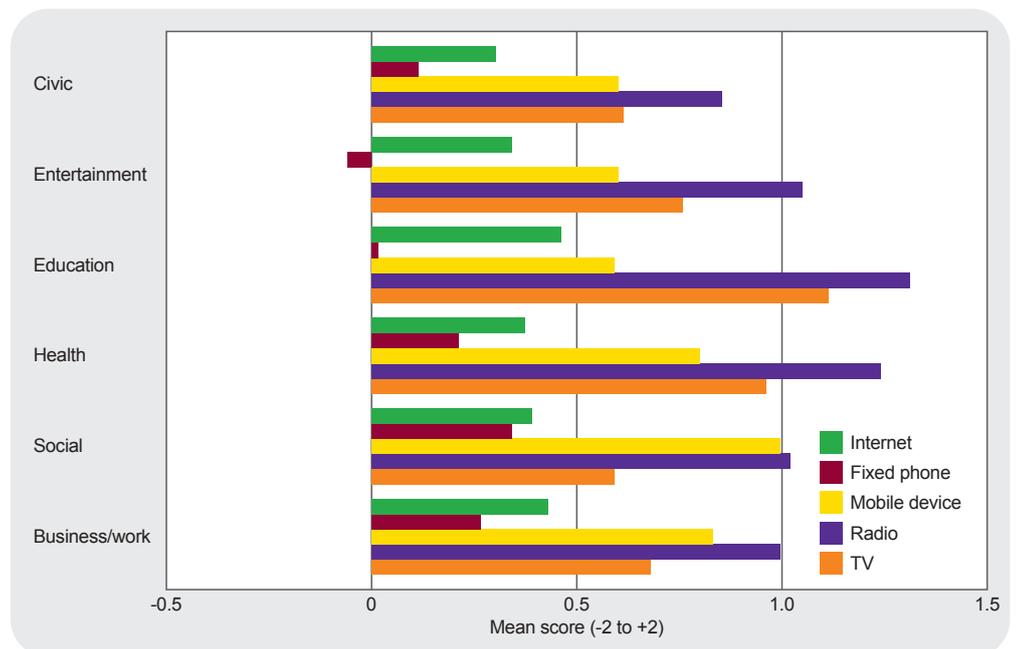
At present, radio and TV are of greatest value for most aspects of livelihoods – civic duties, entertainment, education, health (TV is valued more than radio in India). However, when it comes to social and business matters, mobile devices are of greatest value. To an extent, mobile devices’ relatively poor scores in health, education and civic matters support key stakeholder arguments about the current lack of socially orientated content on mobile devices.

Figure 8. Value of use of ICTs to aspects of daily life – example of Ghana (number of valid responses Ghana; N = 298 to 318)
Scale: -2 = very unhelpful; -1 = unhelpful; 0 = no opinion; 1 = helpful; 2 = very helpful



In South Africa, the most mature market in terms of mobile penetration and network capacity, respondents assign a higher value to mobiles in all aspects of daily life in comparison to those in Ghana and India. This suggests and that as countries’ ICT sectors mature in respect of mobile devices, mobile communications become more valuable for peoples’ livelihoods.

Figure 9. Value of use of ICTs to aspects of daily life – example of South Africa; number of valid response, N = 310 to 311)
Scale: -2 = very unhelpful; -1 = unhelpful; 0 = no opinion; 1 = helpful; 2 = very helpful



Priority types of e-content services and willingness to pay

User priorities in terms of e-content services received through the mobile device and Internet were similar across the three research countries and were closely related to the priority types of information. They are:

- Income generation – seeking and offering job opportunities; banking transactions.
- Education – applying to schools.
- Health – diagnosing and prescribing health treatments.

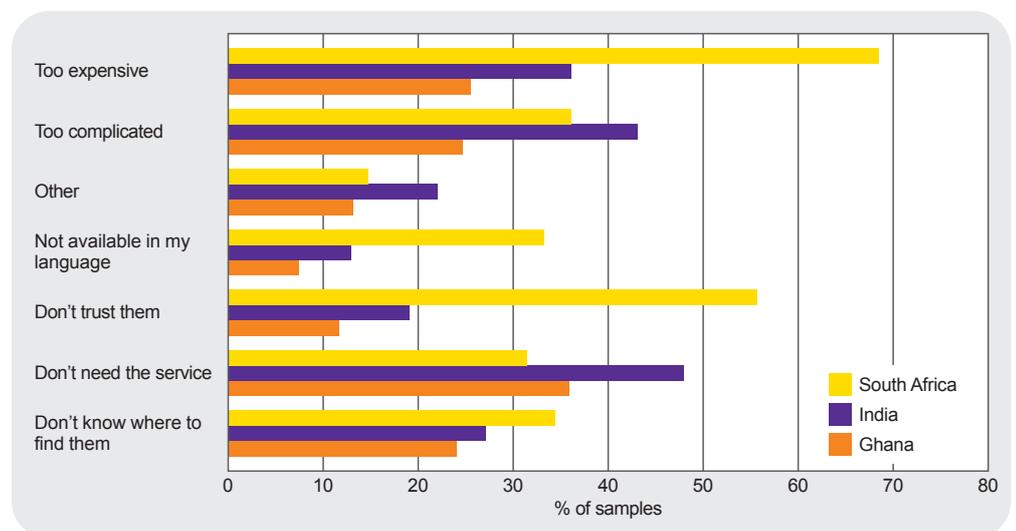
Importantly, willingness to pay for services matches the importance attributed to services, confirming the level of interest in these priority types of e-content services.

When it comes to actually paying for e-content services received through the mobile and Internet, most users want to pay for each successful transaction or for the time they spend using the service.

Reasons for not using e-content services

In South Africa, expense was the main reason for respondents not using services, while a perceived lack of demand for services was the least important. In contrast, no need for the services was cited as the main reason amongst Ghanaian and Indian respondents, with local language issues cited as the least important.

Figure 10. Reasons given for not using e-content services
(Ghana N = 326; India N = 323;
South Africa N = 313)



With an increased understanding of e-content services – i.e. how it will actually benefit users – it is likely that users will place greater importance on the services and, therefore, demand them. The current lack of socially orientated e-content on mobile devices and low Internet usage means it is possible that most respondents do not know how such services work in practice and how they may benefit from them.

Clearly, increasing users' understanding is a key challenge for those wishing to use mobile communications to stimulate the demand and supply of public services.

Challenges and opportunities

There are a number of challenges to overcome and opportunities to seize in order to stimulate the demand and supply of public services through local e-content, including:

1. Resolving problems of low Internet usage with mobile networks

Governments can consider implementing a policy regime that creates an enabling environment for network convergence. South Africa, for example, is overcoming bottlenecks to broadband access by licensing mobile service providers to supply broadband through their networks. The challenge remains for policy makers elsewhere to develop policy environments which enable mobile operators to provide broadband services through their networks.

2. Increasing and strengthening the PPPs needed for the development and delivery of public services through ICTs

Challenges and opportunities lie in increasing and strengthening partnerships in each of the research countries. It is important that governments ensure the private sector is involved in public service provision through ICTs. At the same time, operators should develop the platforms and infrastructure for governments to utilize and content producers must approach government with innovative ideas to supply services using ICTs.

3. Developing strong business models for the sustainable provision of services

Strong business models ensure government and the private sector have a value proposition for which to strive. Our research indicates that users are willing to pay for e-content services that are most important to them. These fall under the rather wide categories of income generation, health and education. An in-depth understanding of which services users want and how much they will pay for services must be developed. This understanding will help ensure the sustainability of services delivered through ICTs and the shared access points that many people currently use.

4. Continuing to develop and supply higher functionality and affordable mobile devices

Most users in the researched countries have basic GSM mobile devices with voice and SMS. Mobile devices manufacturers can continue developing affordable devices with relevant functionalities, to increase ownership of appropriate technology. Governments can also play a role, through favorable taxes and duties on mobile devices and infrastructure equipment.

5. Raising awareness of mobile devices as tools for delivering socially-orientated content and not just commercial services

Among certain stakeholders, there appears to be little understanding about the ability of mobile devices to be the most effective means for delivering public services through local e-content. The private sector, mobile device manufacturers, operators and content producers must do more to educate policymakers, civil society and users about the ability of mobile devices to deliver services, with more examples of mobile content and service provision.

6. Continue to improve access to mobile communications to eradicate urban/rural digital divides

Mobile device penetration has increased rapidly in each of the research countries, but Ghana and India still fall behind South Africa and have wide disparities in urban and rural penetration. Universal Service Funds (USFs) have the potential to create many opportunities for increasing rural access to voice and data. The challenge lies in ensuring they are managed in a way that enables mobile operators to seize these opportunities.

7. Incentivise mobile content producers with improved revenue share for the content they produce

Turning government information into content that can be disseminated through mobile devices continues to be one of the critical problems faced by the government of each country. In Ghana and South Africa, government stakeholders stressed that they are constrained by the lack of content producers. In India, stakeholders admitted there were enough content producers, but the current revenue-sharing model for value-added services was unfavorable. Government, civil society and the private sector must increase and improve ICT training and replace existing revenue-sharing models to induce more content producers to produce socially-orientated content for public services.

8. Scale up examples of successful education e-content initiatives to improve socio-economic development and increase demand for services

Often, the uneducated are unaware of their right to receive public services and, as a result, do not demand them. In India and Ghana, where literacy is low, stakeholders saw education as the biggest challenge. Moreover, the survey confirms that users prioritize education. Therefore, opportunities exist to achieve the dual goal of improving education and stimulating the demand of services through ICTs. Successful content providers who have seized the opportunity to deliver e-education through websites and mobile devices must be supported.

Appendix

About Nokia Siemens Networks

Nokia Siemens Networks is a leading global enabler of communications services. The company provides a complete, well-balanced product portfolio of mobile and fixed network infrastructure solutions and addresses the growing demand for services with 20,000 service professionals worldwide. Nokia Siemens Networks is one of the largest telecommunications infrastructure companies with operations in 150 countries. The company is headquartered in Espoo, Finland. www.nokiasiemensnetworks.com

About Nokia

Nokia is the world leader in mobility, driving the transformation and growth of the converging Internet and communications industries. Nokia makes a wide range of mobile devices and provides people with experiences in music, navigation, video, television, imaging, games and business mobility through these devices. Nokia also provides equipment, solutions and services for communications networks. www.nokia.com

About CTO

The Commonwealth Telecommunications Organisation (CTO) www.cto.int is an inter-governmental developmental partnership of Commonwealth & non-Commonwealth governments, regulatory agencies and ICT operating companies. With a history dating back to 1901, the CTO's current mandate is focused on promoting the effective use of ICTs for the socio-economic development of its member countries. With a focus on telecom policy, regulation and operations, its core functions include research, advisory services and consultancies, training and capacity building, and the provision of knowledge-sharing events.

CTO research activities were carried out in collaboration with Gamos Ltd. Gamos seeks to empower individuals and communities in the poorer sections of society in developing countries by working with social factors surrounding infrastructure development and the application of technology.

Glossary

3G	Third Generation
3GPP	3rd Generation Partnership Project
ADSL	Asymmetric Digital Subscriber Line
CSOs	Civil Society Organisations
EDGE	Enhanced Data rates for GSM Evolution
GPRS	General Packet Radio Service
GSM	Global System for Mobile Communications
HSDPA	High Speed Downlink Packet Access
ICTs	Information and Communication Technologies
PC	Personal Computer
PPP	Public-Private Partnerships
SMS	Short Message Service
WAP	Wireless Application Protocol
WCDMA	Wideband Code Division Multiple Access

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