Identifying Opportunities to Drive Demand Report prepared for the ICT Vision 2020 Investment Workstream

Dalberg Global Development Advisors

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Agenda

Executive summary

Context and approach

Recommendations

- Enabling individual digital citizenship
- Promoting economic growth of key ICT/broadband enabled industries
- Driving ICT/broadband sector growth

Recommendations for demand side investment

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Executive summary (1/2)

SA should apply a 3-pronged strategy driven by enabling a critical mass of digital citizens and key industries in the short term.

1.Enabling individual digital citizenship requires building ***critical mass of users*** by addressing two key barriers: affordability and content

- **Affordability:** Private sector must reduce prices for the end user. Users need better access to devices (feature/smart phones, PCs or tablets) and connectivity. **Private sector** must drive down cost and can consider additional solutions such as bundling device and connection with content. While detailed information on price elasticity of demand for broadband is lacking for SA, evidence from other developing countries showed that dramatic reduction in the price of smartphones ($100) lead to significant increase in internet users in the same period.
- **Content:** Increase availability/relevance of content: PPCs must drive local content/services in order to guarantee stickiness of online experience.
    - **Solutions for education**: Primary and secondary curriculum development; enhanced online learning/ tutoring
    - **eGov services that will drive registrations and transactions**: e.g. NHIS, school / exam registrations, voter registrations
    - **Health services** that will reduce total cost of access for users (medical call centres; chronic disease management solutions) and improve efficiencies for public health services (supply chain management; patient management)
    - **Epayments/ transactions** as an essential building block for growth and delivery of a wide range of services (be it health, education, content, etc).

Financing could be driven by both **DFI finance or in line with ICT Charter requirements** (1.5% after tax profit focused on socio-economic development) **to spur early stage app/content development** aligned with user needs.

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Executive summary (2/2)

2.Promoting economic growth of key ICT enabled industries and efficiency of major industries. Two key users are particularly attractive and will further help SA build a critical mass of users (SMEs and government)

1. **SME industry growth**: Demonstrated potential (those using email/web grow twice as fast as those that do not; currently account for 750K-6M of businesses in SA and will continue to be priority for government. SMEs also face significant access to information challenges that can be addressed online
    - Establish a targeted **SME app development initiative** (centre, fund, competition) to grow customized content.
    - Leverage **ICT charter regulations** (5% after tax profit) to drive SME growth through use of internet-enabled services.
2. **Government:** Opportunity to aggregate government demand and prioritize egov services (health, education) in order for private sector to crowd in with solutions. However, key challenge is lack of awareness and capacity.
    - **Grow transactional services**: NHIS; eVISA; schools registration; social media to drive transparency communication/information about voter registration). However, government also needs to **aggregate its own demand** to make it attractive for private sector; Use of USIF is unclear.

***3.Leadership in key ICT industries (content, services, applications)*:** Given SA's advantages, there may be unique opportunities for SA to invest in niche areas, however, in vestment should be focused on alignment with broader goals to develop a critical mass of users in the short term.

- **Directing talent**: South Africa has talented set of developers, successful entrepreneurs and high levels of available capital. This should be channeled into the development of appropriate locations for developer community and tightly aligned with need for new app development aligned with mass users **(e.g. developing at tech hub in Johannesburg)**

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There are a number of ways in which a country can leverage broadband to drive economic growth.

Countries have chosen to focus on different strategies but these strategies are not necessarily sequential and can be implemented in parallel.

	1	2	3
	Enable individual digital citizenship	***Promote economic growth of industries and ITES industries***	***Demonstrate leadership for key ICT products or services***
	Using ICT/BB to empower citizens and build new industries	*Using ICT/BB to improve the efficiency of industries and build out ICT/BB enabled product or service deliver (e.g. SMEs, BPO, call centres, manufacturing)*	*Using ICT/BB to boost exports, domestic markets or national ICT/BB capacity. ICT/BB based goods (e.g. hardware, software and applications development)*
Illustrative country examples	***Estonia Lithuania Kenya***	***India Malaysia Philippines***	***India South Korea***

South Africa should deploy a multi-pronged ICT strategy but focus on building a <u>critical mass of digital citizens and key industry users (government and SMEs)</u> in order to drive bb demand alongside its development mandate.

Source: Malaysian Ministry of Science Technology and Innovation 2008 ICT Roadmap; Dalberg Analysis. USAID
http://pdf.usaid.gov/pdf_docs/PNADO693.pdf

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Approach: Our approach included a three-part analysis including a review of barriers to broadband usage, assessment of demographic trends that will influence population growth and review of learning from demand side interventions applied globally.

	Approach
1 **Review of barriers to internet/broadband usage in South Africa**	• Literature review of key barriers to uptake and usage in SA • Input from the ICT Colloquium and ICT investment working group sessions • Interviews with senior industry members and professionals
2 **Global review of demand side interventions**	• Literature review of research by internationally recognized institutions such as ITU, GSMA, WB, infoDev, WEF, and others of over 100 demand side interventions from both developed and emerging markets • Review of initiatives based on type of deployment, demand barrier addressed, financing structure, stakeholder engagement and relative impact
3 **Review of socio-economic and demographic trends that will shape South Africa by 2030**	• Literature review on socio economic and demographic trends influencing South Africa's growth by 2030 • Additional targeted analysis on key issues including health, education, SMEs, access to finance and governance

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Approach : Our analysis focused on four key barriers and drivers that will influence the uptake and use of internet and broadband services

Affordability

Driving demand by finding a **price point that is viable** for users

- What is the cost of:
  - Device?
  - Connection?
  - Content?
- How does the use of e-enabled services contribute to accessing other goods and services / to the overall budget? (e.g. financial services, healthcare, education)

Access

Driving demand by providing service within reasonable **physical as well as cultural reach** of users.

- What physical connection point to is available?
  - Device
  - Connection mode
- How fast and reliable are these connections?
- What content is available?
- Is this content relevant and valuable to users?

Awareness

Driving demand by increasing **knowledge and interest** about service capabilities and benefits.

- Are users aware of what services are available to them?
- Are users aware of the benefits?
- Are users equipped to use basic internet/broadband hardware and software?
- Are users able to contribute to internet ecosystems, e.g., microenterprise, user-generated content?

Enabling Environment

Driving demand through initiatives that establish **common norms and external supports, making an impact across the entire internet/broadband ecosystem** (e.g., policy & regulation, user interface, design).

- How do providers, users, and other stakeholders interact with each other? How do these interactions compare to their expectations, contributions and incentives?
- Are appropriate elements of human and financial capital in place to drive growth of the sector?

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Approach : Building a critical mass of broadband users will be driven by a nuanced understanding of both drivers and sub-drivers and the range levers for unlocking demand.

Drivers of demand	Sub-drivers	Selected levers for unlocking demand	Examples
Affordability	• Cost of device • Cost of connectivity • Cost of content	• Offering of devices (PC, mobile, tablet) • Universal access funds, tax and tariffs • Flat-rate pricing bundles and usage increments	• Safaricom/Google $100 3G phone, small top-ups, subscription SMS info • Competition driving down market tariffs in Kenya
Access/ availability	• Presence, speed, and reliability of connection • Availability of content • Relevance of content	• Broadband infrastructure and devices • SMS news and info, mobile money • Local media and services, tailored for specific user segments	• Azjerbaijani National PC project rollout • Colombia Telecentre Project • WIZZIT/Absa banking with Xhosa language support
Awareness	• Knowledge of service and benefits • Digital literacy	• Integration with education - schools; government digitization initiatives • Promotion and training of SMEs	• K-Nect project • Warana Unwired • South Africa “Who am I Online” Initiative
Enabling Environment	• Available financing • Policy norms & standards • Human capital to develop content & solutions	• Financial incentives, challenge funds • Regulatory decisions, consumer protection agencies • Hubs, innovation centres, design labs	• DfID challenge fund (led to Safaricom M-PESA) • Dutch Centre for SME App Dev • Pakistani Int’l Org for Migration flood analytics response

Source: Adapted from *The Global Information Technology Report 2010-2011,* World Economic Forum and *Measuring the Information Society 2011,* ITU *; WB Broadband strategies Handbook 2011; Dalberg analysis of various other sources (see detailed database available)*
**total cost of connectivity refers to the fact that, in some cases, additional hardware or payments are required to access the service. i.e. a laptop is required to use a mobile broadband modem or a phone line is required for DSL. Or, in rural areas, this might include the cost of transport/travel to reach a telecentre.*

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Approach: An assessment of key barriers was then combined with a review of socio-economic and demographic trends that will influence the nature demand and the design of appropriate solutions

Key trends influencing population by 2030…

+25% adults

(25-45 yr) population **(+4M)**

+10M

people living in **cities** (~70% urbanization)

-2.5M

people living in **rural areas**

Immigration

from other African countries

7.3M

people living with HIV (and other NCDs)

Emerging middle class

will continue to grow

…will influence the need and opportunity for ICT/ broadband related services.

LIVELIHOODS

- Immigration and urbanization will influence growth of **SMEs;**
- Agriculture will be important for rural development*
- Emerging middle class growth will drive investment in formal housing, electricity, telecommunications, health care and education**

HEALTH

- Increased urbanization will strain overburdened health systems. Health system will benefit from solutions that shift responsibilities
- Increase in HIV+ population (as well as non-communicable diseases) will increase need for chronic disease management /support

EDUCATION

- Primary and secondary education services will be critical, particularly as demand for services in urban areas increases
- Growing adult population (25-45yrs) will increase demand for both employment and continued education that will drive employment opportunities

FINANCIAL SERVICES

- Immigration and urbanization will increase need for both international and domestic remittances as well as other product/services including payments, credit, savings, insurance and social grants

GOVERNMENT SERVICES

- Increased urbanization will require strong management of public administrative services by government (e.g. home affairs national identity services, NHIS, taxes, business registration)

Source: National Development Plan; Dalberg analysis; *Gates Foundation and IFAD Report, **AfDB Middle class

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Recommendations: South Africa should recognize a multi-pronged strategy but drive enablement of digital citizens, government and SMEs in the short-term (1/2)

Key dimensions for delivering ICT/BB leadership

1. ***Enable individual digital citizenship***
2. ***Promote growth of key internet enabled industries (SME & government)***
3. ***Demonstrate leadership in key ICT industries (content, services, applications)***

Key findings and recommendations

1. Build a **critical mass** of users by **reducing costs and increasing availability/ relevance of content.**
   - **Reduce costs:** Private sector must reduce prices for the end user (both device and connectivity). Government should leverage USIF for selected users (rural)
   - **Increase availability/relevance of content:** PPCs must drive local content/services in order to guarantee stickiness of online experience.
     - **Solutions for education**: Primary and secondary curriculum development; enhanced online learning/ tutoring
     - **eGov services that will drive registrations and transactions**: e.g. NHIS, school / exam registrations, voter registrations
     - **Health services** that will reduce total cost of access for users (medical call centres; chronic disease management solutions) and improve efficiencies for public health services (supply chain management; patient management)
     - **Epayments/ transactions** as an essential building block for growth and delivery of a wide range of services (be it health, education, content, etc).
- **DFI finance and ICT Charter requirements*** to promote early stage app/content development; Government must aggregate demand in order to crowd in private sector investment (key areas: health, edu, egov services)

* ICT Charter specifies 1.5% after tax profit expenditure on socio-economic investment)

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Recommendations: South Africa should recognize a multi-pronged strategy but drive enablement of digital citizens, government and SMEs in the short-term (2/2)

Key dimensions for delivering ICT/BB leadership	Key findings and recommendations
1 *Enable individual digital citizenship*	
2 *Promote growth of key internet enabled industries (SME & government)*	2. Recognize **SMEs and government** as key users with potential to realize significant sector/industry growth and improved efficiency. • **Establish a targeted SME app development initiative** (centre, fund, competition) to grow customized content. • **Aggregate government demand and prioritize egov services (**health, edu) in order for private sector to crowd in with solutions. • **Leverage ICT charter** regulations (5% after tax profit) to support SME growth through use of internet-enabled services.
3 *Demonstrate leadership in key ICT industries (content, services, applications)*	3. Identify opportunities for South Africa to strengthen competitiveness in the **production and export of goods and services** should be considered in the medium term but recognizing that **SA has a number of strengths to build on**. Short term priorities should align with building critical mass of users as outlined above (e.g. Leveraging DFI and ICT Charter Finance to promote development of customized solutions).

* ICT Charter specifies 1.5% after tax profit expenditure on socio-economic investment)

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South Africa should prioritize *affordability and access* initiatives for the consumer segment

1

Key barriers to internet use in SA

- **Affordability:** Price of device and connectivity for users is high[2]; particularly compared with other African countries and on a global scale[5]
- **Lack of access to relevant content** to support social and economic growth;
- **Low levels of literacy, digital literacy and language** across of potential users

2

Learning from global examples

- Building critical mass of users will require addressing **pricing and content** in parallel.
- Solutions that **bundled** device, connectivity (and /or content) have been more successful than subsidies on device or access alone.
- ***Awareness*** was best tackled indirectly through relevant content.
- **DFI finance** has played a key role in the early stage development of content related to health, edu, agriculture and mpayment solutions.

3

Demographic trends[1] [f]for SA

- Emerging middle class growth will drive **HH expenditure on education, telecommunications, housing, electricity, and healthcare**
- Growing adult population and unemployment will increase demand for **education and increase entrepreneurship (SME)** support.
- Increase in HIV+ population (as well as non-communicable diseases) will increase need for **health and disease management**
- **Strength and growth of distance learning (UNISA) will drive tutoring and supplementary educational resource requirements.**

Recommendations:

Affordability first: Price is a significant barrier to use. Private sector needs to reduce overall price of connectivity and devices. Government can additionally subsidize selected user groups such as low income populations or students.

Content development related to socio-economic needs and goals: Beyond entertainment, content must align with economic growth and future demand.

- **Education:** Improve and execute on eSchools project . Drive solutions that integrate digital literacy while addressing edu inefficiencies (e.g. textbooks)
- **eGov services**: SA has fallen behind on the use of eGov services (UN 2010 eGov ranking) vs. its peers. Gvt must aggregate demand and move from pilots to large scale deployments. e.g. connecting hospitals or schools.
- **Recognize e-payments as a core building block** for service delivery (e.g. health insurance, school fees, tax payments, social grants). Urbanization will also drive need for effective remittance and payment solutions.

Targeted financing: Leverage DFI finance and ICT Charter requirements* to promote early stage app/content development for key sectors where business models are not yet established.

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Sources: Footnotes 1: National Development Plan, 2012; Footnotes 2,3: Google *Insights Africa* Analytics 2011; Footnotes 4: Dalberg Analysis of >100 global initiatives from relevant literature; 5: According to analysis by Balancing Act in May 2011, SA performed poorly in terms of internet bundle prices R/mb vs other african countries; http://www.balancingact-africa.com/news/en/issue-no-

1 When considering interventions, a broader view of the South African context suggests that affordability and access will need to be actively addressed.

Drivers of demand	Sub-drivers	Intensity of barrier for *consumers*	Observations
Affordability	• Cost of device • Cost of connectivity • Cost of content		Data on barriers and drivers of internet usage for people not currently using the internet indicate that *affordability* is very important[1]. Price of an internet bundle (R/mb) in SA is significantly higher than other countries across Africa[5] South African's may be brand conscious with in reason (within basic, feature or smartphone segments) but this is unlikely to impact upgrading if pricing is affordable.[2]
Access	• Presence, speed, and reliability of connection • Availability of content • Relevance of content, services and platforms		Data on non-user barriers to internet usage in South Africa list *irrelevant and inappropriate content* as two main barriers while a *faster and more reliable connection* is far less important[3] . In a survey conducted by Google, 25% of non-users list lack of relevant content and 21% list inappropriate content as barriers to use.
Awareness	• Knowledge of service and benefits • Digital literacy		Data indicates that *knowledge* is both a major driver and barrier to internet use in South Africa[5]. Analysis of existing literature found the impact of digital literacy on demand to be limited[6] but national priorities suggest otherwise[7].

Very strong barrier **Strong barrier** **Neutral impact** **Low barrier** **Not an issue**

Sources: Footnotes 1,3: Google *Insights Africa* Analytics 2011; Footnotes 2,8: Dalberg interviews with industry experts from MTN South Africa and SA institute for software engineers; Footnotes 4,6:: Dalberg Analysis of >100 global initiatives from relevant literature; *total cost of connectivity refers to the fact that, in some cases, additional hardware or payments are required to access the service. i.e. a laptop is required to use a mobile broadband modem or a phone line is required for DSL. Or, in rural areas, this might include the cost of transport/travel to reach a telecentre.*; 5. According to analysis by Balancing Act in May 2011, SA performed poorly in terms of internet bundle prices R/mb vs other african countries;* http://www.balancingact-africa.com/news/en/issue-no-555/internet/test-of-article-with/en

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2

South Africa should prioritize *affordability* initiatives for consumers, focusing on cost of connectivity and cost of device to reduce total cost of ownership

A review of over 60 initiatives targeting affordability showed that high impact initiatives bundled devices with content had the strongest demonstration of impact on overall user uptake and usage of services

Selected high impact interventions:

•High and medium impact initiatives aimed at affordability varied immensely both by type and region, however the overwhelming majority did not offer direct subsidies to consumers – instead, cost of ownership was lowered indirectly, for example:

- By introducing new competition in telecoms (Kenya),
- Or distributing low cost computers to schools (Portugal)

•Some of the more impactful solutions addressed issues of affordability by bundling components. E.g. building of community information centres in the Dominican Republic addressed connectivity and device costs, and a collaboration between Microsoft and the National PC project in Azerbaijan lead to lower device and content costs

Implications:

Price of connectivity is still high**. Private sector should needs to further reduce cost of devices and connectivity** in the short term in order to drive new users growth.

Government should explore **better use of USIF** to serve hard to reach communities (rural or low income users).

Source: Dalberg Analysis of >100 global initiatives from relevant literature; Note: majority of cases falling across multiple categories.

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2

South Africa should prioritize *access* by leveraging DFI and ICT Charter financing to drive the development of appropriate content.

Observations of global interventions focused on improving access:

- High impact interventions ranged from the use of DFI financing to drive content development to focused investment on mmoney/ mpayment solutions or social networking platforms in order to build a foundation for future online interaction and transactions.

- The majority of initiatives aimed at providing an accessible internet connection – such as Malaysia's Universal Service Fund and – have involved the public sector. The most successful of these, for example Colombia's telecentre initiative and Malaysia's e-school program have involved the private sector either in financing or implementing the program.

- The private sector was the predominant player addressing content relevance and availability. The most successful of these initiatives also focused on affordability and providing content at a lower price point than the existing market. For example, Nokia's Ovi Life Tools in Nigeria provides useful healthcare information for its users on two basic handsets at affordable prices.

Implications:
Global experience suggests that DFI financing or structures such as challenge funds, app development contests can play a key role in the development of new content (particularly focused on addressing local socio-economic user needs).

Beyond DFI finance, the recent modifications to the ICT Charter requirements (1.5% of after tax profit should focus on socio-economic development) could present unique pool of financing for this purpose.

Government must also play a key role as an **aggregator of user demand** for public and citizen e-services.

Source: Dalberg Analysis of >100 global initiatives from relevant literature; Note: majority of cases falling across multiple categories.

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2

Country case study: Driving access through e-learning in Malaysia

The Malaysian smart-school actively promotes e-learning and works towards a more technologically literate population

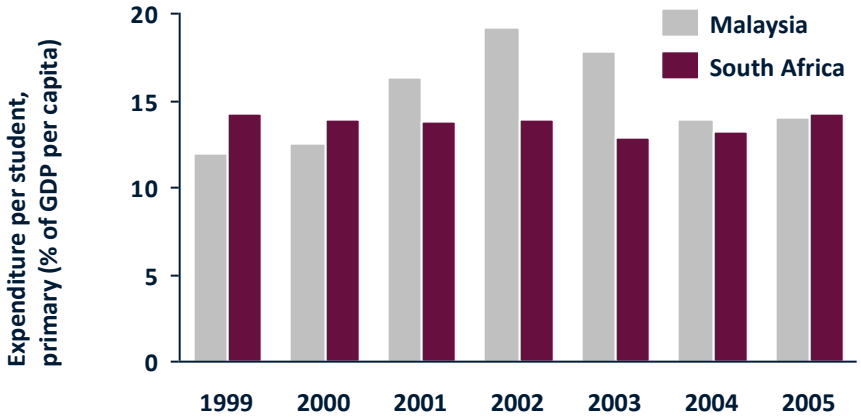
Impact: The smart-school initiative was first piloted in 1997 to promote self-directed learning and ICT skills and capabilities. By 2010 the project was extended to all 9000 schools in the country. Through this and other ICT initiatives, Malaysia has transformed itself into a high technology knowledge based economy and has been very successful in encouraging more of its citizens to access the internet – the smart-school initiative contributed to this success by allowing citizens to engage with the digital economy from an early age.

Lever: The smart-school initiative and a range of other projects have been driven by *public private partnership* where government drives a framework but works closely with the private sector to implement the solution. The smart school is a fully integrated public private e-learning initiative that is built around technology.

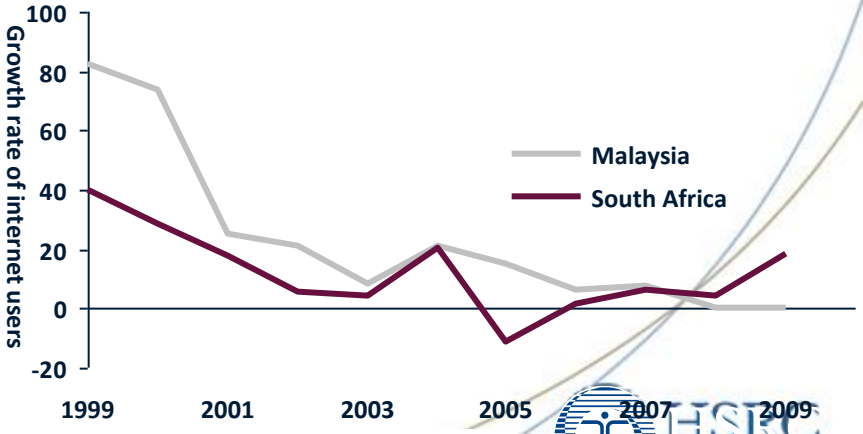
Description: The smart-school initiative was introduced as a flagship application of the 8th Malaysian Plan (8MP) which aimed to promote sustained, productivity driven growth via a technologically literate and critically thinking workforce. The expansion of ICT services among the general public and rural populations was given priority under the 8MP. Total expenditure on MSC smart-school from 2001-2010, > RM530 million

RESULTS TO DATE

Malaysia ramped up expenditure on primary education following the smart-school initiative

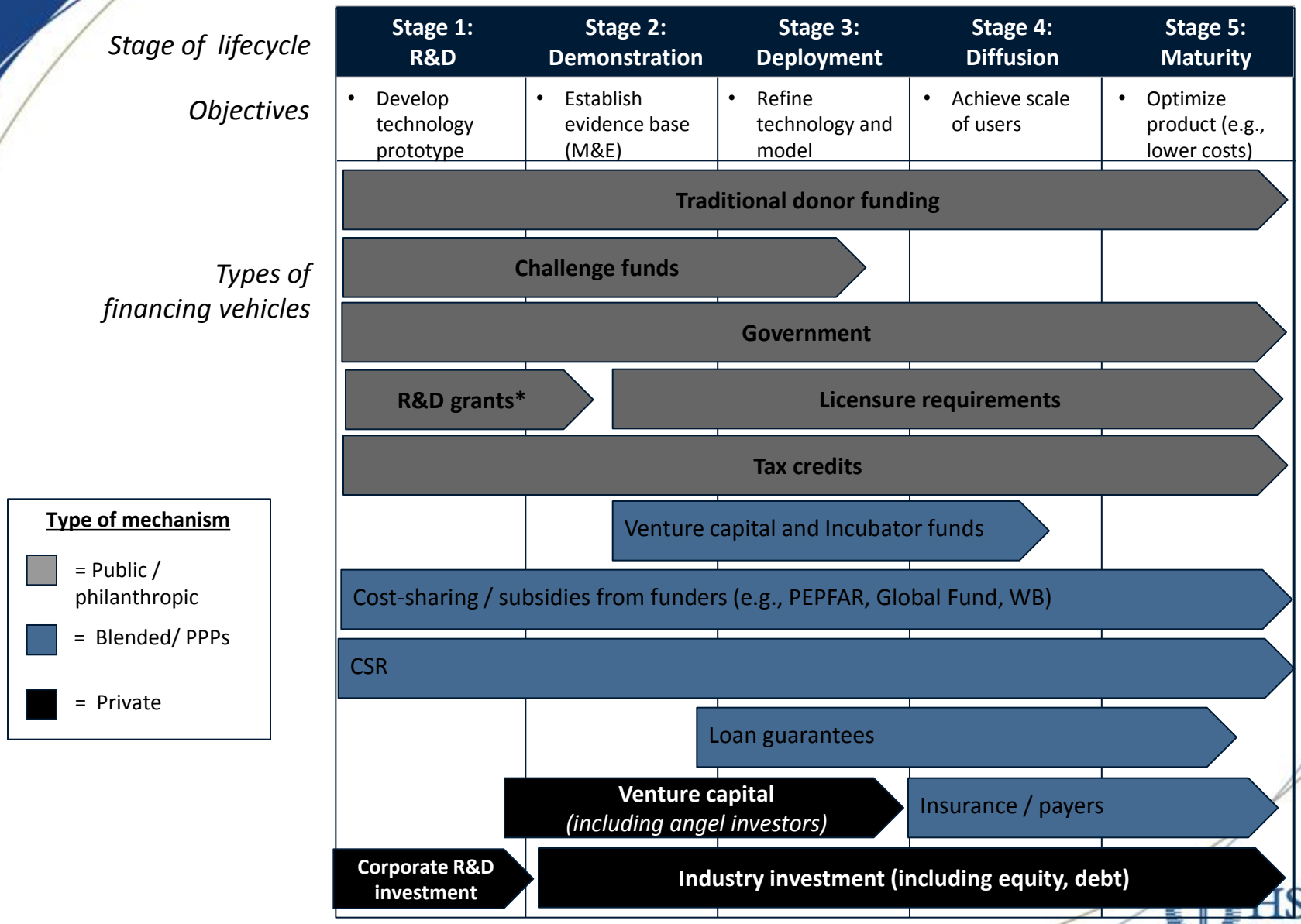


Malaysia's internet user growth has been impressive and consistently above South Africa's



Source: World Bank Development Indicators; Asian Development Bank; Government of Malaysia 1997 Smart School Blueprint; Malaysian Ministry of Science Technology and Innovation 2008 ICT Roadmap; Dalberg Analysis.

2 A range of blended financing mechanisms, in particular blended and DFI financing can be used to support content development, particularly where sustainability is not yet proven.



Source: Dalberg Analysis; Note: Not exhaustive; Arrows do not indicate a continuum or linear relationship across funding vehicles. Source: Dalberg research and analysis
**including competitive subsidy, cost sharing*

3 Building a critical mass of users will be influenced by socio-economic and demographic trends such as urbanization, a growing middle class and changing health needs.

Selected demographic trends in South Africa	Selected examples of the potential for internet/broadband to address key needs
Livelihoods and the emerging middle class • Emerging middle class growth will drive investment in formal housing, electricity, telecommunications, health care and education • Agriculture will be important for rural development*	• Leveraging broadband for electricity payments (on grid or off grid) • Farmer market pricing and financing solutions
Health ▪ Increased urbanization will strain overburdened health systems and require solutions that shift the delivery of care ▪ Increase in HIV+ population (as well as non-communicable diseases) will increase need for disease management	• HIV management and support through treatment reminders, Q&A/ informational services • Maternal health care and support • National health insurance and health savings management through vouchers (could link to social grants as well)
Education and employment ▪ Primary and secondary education services will be critical, particularly as demand for services in urban areas increases ▪ Growing adult population (25-45yrs) will increase demand for both employment and continued education that will drive employment opportunities	• Textbook curriculum delivery (e.g. worldreader, Akaash) • Distance learning and supplementary tutoring services • Employment matching and support
Financial and citizen services • Immigration and urbanization will increase need for both international and domestic remittances as well as other product/services including payments, credit, savings, insurance and social grants	• Cash transfers and management of social grants • Financial/ business services including but extending beyond money transfer savings, credit and insurance • National identification/ registration systems; eVISA

Source: Human Sciences Research Council; Kleeman, Michael expert opinion; Dalberg analysis.

3

Selected size of potential user groups

Emerging population characteristics	High level sizing of market potential
Livelihoods • Immigration and urbanization will influence growth of ***SMEs;*** • ***Agriculture workforce*** will continue to be important for rural development* • ***Emerging middle class*** growth will drive investment in formal housing, electricity, telecommunications, health care and education**	• **Expected growth in SMEs =** ~2.5M SMEs today • **In 2010, agriculture workforce** accounted for 5% of SA's total workforce • **Emerging middle class: ~9.8M as of 2008** and growing by >20% per annum. ~600K HH will move out of poverty by 2014**
Health ▪ Increased urbanization will strain overburdened health systems and increase demand for quality services for basic primary care ▪ Increase in ***HIV+ population*** (as well as NCDs) will increase need for chronic disease management /support as well as ***social grant administration***	• **HIV+ population:** 7M by 2030 • **NHIS:** Plans for national health insurance including electronic medical records
Education ▪ ***Primary and secondary education*** services will be critical, particularly as demand for services in urban areas increases ▪ Growing adult population (25-45yrs) will increase demand for ***both employment and continued education*** that will drive employment opportunities	• **Students in public education system (2009):** 5.2M • **Tertiary education:** Aim to reach 1.5M learners in university by 2030 (vs. 900K as of 2011). 400k already online via UNISA (DHET Green Paper)
Financial services • Immigration and urbanization will increase need for both international and domestic remittances as well as other product/services including payments, credit, savings, insurance and ***social grants***	• **Unbanked**: Only ~63% of the population in South Africa is formally 'banked' (Finscope: 2010) • **Remittances**: 24% of adult South Africans are either sending (~4M) or receiving money (5.2 M) to/from family members
Government services • Increased urbanization will require strong management of ***public administrative services*** by government (e.g. home affairs national identity services, NHIS, taxes, business registration)	• **NHIS:** Plans for national health insurance including electronic medical records • **HANIS/NEC identification system:** ~50M people

**Source: http://www.iweek.co.za/report-back/sa-africa-laden-with-tech-opportunities and AfDB Middle of the Pyramid Report; http://www.southafrica.info/services/government/smart-id-081512.htm

Given its skills base and current enabling environment, South Africa should focus on driving individual and industrial growth in the short term.

Aspirations for 2020

Universal individual access that will maximize education, opportunity and productivity aligned with public policy goals **(*Enable individual digital citizenship)***

Recommendations to drive demand

Affordability first: Price is a significant barrier to use. Private sector needs to reduce overall price of connectivity and devices. Government can additionally subsidize selected user groups such as low income populations or students.

Content development related to socio-economic needs and goals: Beyond entertainment, content must align with economic growth and future demand.

- **Education:** Improve and execute on eSchools project . Drive solutions that integrate digital literacy while addressing edu inefficiencies (e.g. textbooks)
- **eGov services**: SA has fallen behind on the use of eGov services (UN 2010 eGov ranking) vs. its peers. Gvt must aggregate demand and move from pilots to large scale deployments. e.g. connecting hospitals or schools.
- **Recognize e-payments as a core building block** for service delivery (e.g. health insurance, school fees, tax payments, social grants). Urbanization will also drive need for effective remittance and payment solutions.

Targeted financing: Leverage DFI finance and ICT Charter requirements* to promote early stage app/content development for key sectors where business models are not yet established.

Source: Human Sciences Research Council; Kleeman, Michael expert opinion; Dalberg analysis.

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Similar to the consumer segment, South Africa should prioritize *affordability and access* initiatives for SMEs

1

Key barriers to internet use in SA

- **Total** cost of ownership is a significant barrier to demand where many South African SMEs employ one person or less3.
- SMEs face a range of business challenges from access to markets to finance to strategy and other business development support. Therefore, the availability of useful content is critical for unlocking demand

2

Learning from global examples

- There is a ***strong link between successful access and affordability initiatives*** for SMEs -affordability and access are probably both necessary but not sufficient conditions for demand.
- Advent of ***cloud computing*** offers significant savings in a rapidly growing market*
- In general, ***private and public private partnerships*** delivered higher impact results when addressing access issues

3

Demographic trends[1 f] for SA

- Between 750K and 6M formal and informal SMEs exist in South Africa and are estimated to account for >10M jobs. Government has made clear investment in ensuring continued growth of this sector.
- South African SMEs using web and email grow twice as fast as those that do not[2]
- Increased urbanization and high unemployment will likely influence the growth SMEs by 2030

Recommendations:

Establish centres/initiatives dedicated to SME applications development (e.g. in Netherlands SME Application Development Centre) where publicly funded centres are connected to both the business community as well as private funding of ventures.

Build and scale solutions focused that support financial management , access to information and access to business support services. SMEs have a wide range of business needs including financial and business management services but investments could focus on:

- **Access to an online marketplace of service providers** could significantly improve information asymmetry related to business management support.
- **Financial service solutions**: e-payment and transfer services (e.g. MPESA) have demonstrated an impact on the overall cost of financial services for SMEs. Additionally, market information solutions (namely agriculture) have also demonstrated impact on SME revenues.
- **Bringing informal SMEs into the formal economy**. IFC Rwanda is currently collaborating on a tool for SMEs to calculate and facilitate tax payments

Financing from ICT Charter requirements (5% of after tax profit to promote black owned enterprises) is uniquely positioned to drive SME demand.

Sources: Footnotes 1: National Development Plan, 2012; Finscope small business survey; Google *Insights Africa* Analytics 2011; *Cloud Computing market in India is estimated at around $400 million and is expected to reach $4.5 billion by 2015 driven by SMEs that constitute the backbone of Indian economy.Economic Times Online Feb 28, 2012; Footnotes 2,3: World Bank Enterprise Survey, SA data 2010; Footnotes 4: Dalberg analysis of various other sources. (See detailed Excel database.);

1

A broad view of the South African context suggests that – similar to the consumer segment – affordability and access are likely the most significant inhibitors of BB uptake for SMEs

Drivers of demand	Sub-drivers	Intensity of barrier for *SMEs*	Observations:
Affordability	• Cost of device • Cost of connectivity • Cost of content		Data shows that South African SMEs that make use of ICT grow faster than those that do not[1], yet total cost of ownership is likely to be a major barrier to demand within the SME sector where many South African SMEs employ one person or less[2]. As with consumers, cost of content for SME ICT services is likely to be a constraining factor.
Access	• Presence, speed, and reliability of connection • Availability of content • Relevance of content, services and platforms		Similar to the consumer segment, the availability of useful content can play a major role in unlocking demand amongst SMEs. For example online accounting support services can greatly enhance SME efficiency[3]. There is a good chance that SME experiences will be similar to consumers – hence, faster and more reliable connections unlikely to be a major demand driver[4].
Awareness	• Knowledge of service and benefits • Digital literacy		Use of mobile and relevant applications in South Africa is rampant[5], suggesting that citizens, particularly younger ones, already have fairly strong awareness levels. Moreover, existing literature suggests that digital literacy initiatives have been largely ineffective demand generators[6]. There may be scenarios where SMEs are unaware of the existence of useful services or are unable to use them. However, it is therefore unlikely that awareness should constitute a major demand constraint for the SME group.

Very strong barrier **Strong barrier** **Neutral impact** **Low barrier** **Not an issue**

Source: Footnotes 1: World Bank Enterprise Survey, SA data 2010; Footnotes 2,3,6,8: Dalberg analysis of various other sources. (See detailed Excel database.); Footnotes 4: Google *Insights Africa* Analytics 2011; Footnoes 3,5: Adapted from The Global Information Technology Report 2010-2011, World Economic Forum and Measuring the Information Society 2011, ITU ; WB Broadband strategies Handbook 2011; Footnotes: 7: Dalberg interviews with industry experts from the South African Institute for Software Engineers.

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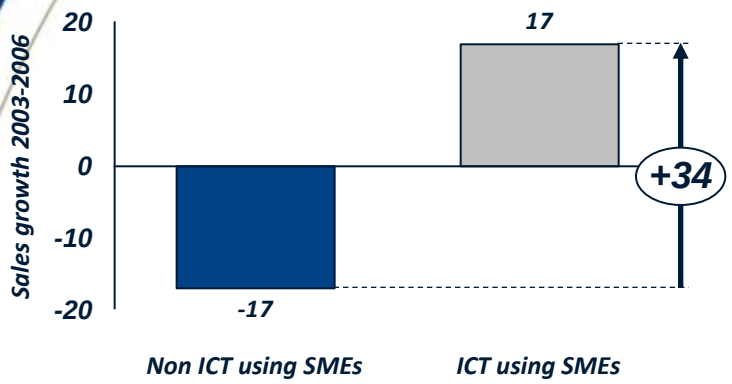
However, SMEs that leverage web/email are shown to grow faster than their off-line counterparts which suggests the presence of latent demand across the sector. (1/2)

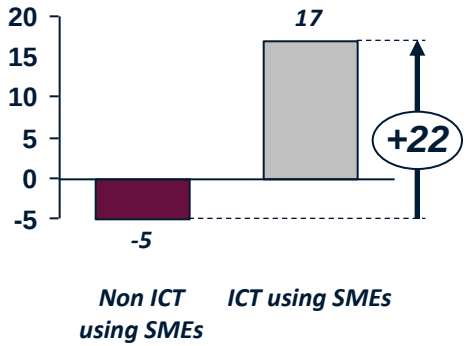
Historically, those small South African firms that made use of ICT have grown faster than those who have not.

Small firm sales growth in South Africa (%)

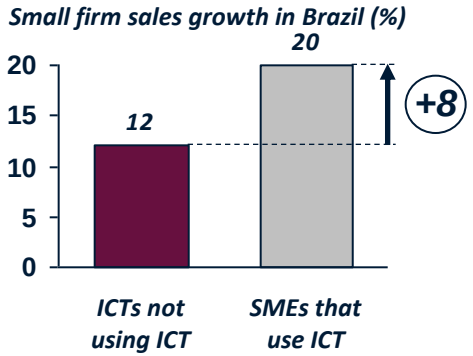


Other countries have seen similar results*

Small firm sales growth in Turkey (%)



Small firm sales growth in Brazil (%)



What could explain the clear ICT/BB advantage?

- ***Existing correlation between the use of ICT/BB and key success factors*** such as: Markets with online consumers; or higher education levels have greater access to ICT/BB
- ***Geographic expansion*** enabling SMEs to compete with larger firms by accessing markets that were previously out of reach.
- ***Enhanced marketing*** through online marketing that delivers expanded reach and yields valuable data about users.

Source: World Bank enterprise survey of South Africa, 2007; The Boston Consulting Group, Internet Economy Report 2012; Dalberg analysis; Based on The Boston Consulting Group's Internet Economy Report, 2012, sales growth measured 2009-2012.

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1 If an increased number of South African SMEs were able to make use of web and email, this could have a significant impact on the growth of the sector and of the economy (2/2)

Projecting future South African SME growth, in the event of 100% use of web and email by small firms

Step	Calculation	Assumptions
1 Number of small firms not using ICT today	Estimated # SME firms today (5-19 employees) = 340, 000 x 47% (# firms not using ICT in 2006) x 40% (Assumption 1) = ***63, 920***	• Assume that the number of SMEs not using web/email is 60% less today than in 2006* • Assume that 50% of those SMEs not using web/email will start using it.
2 Estimated total sales of small firms not using ICT today	63, 920 x R3.7million (inflation adjusted average total sales) ***= R236billion***	
3 Historical difference in sales growth between ICT and non ICT using firms	Non ICT = -17% ICT = 17% ***Difference is 34%***	
4 Forecast increase in sales by 2015, through 50% increased use of web and email	R235 bill x 34% x 50% (Assumption 2) ***= R40 billion*** (R29 billion if exclude adjustment for inflation in step 2)	

Implications:

Even at a conservative level, there is evidence that increased access to internet services can improve overall SME growth.

These estimates only focus on the use of email and presence of a website and, therefore, are likely to significantly underestimate the potential of additional internet enabled services such as cloud computing.

Next wave of opportunities to drive SME growth through e-enabled services:

•***Access to information services:*** *SMEs require a range of support services but have limited access/awareness of what exists. Basic market place solutions to connect SMEs to BDS service providers could have signficant impact.*
•***Improved customer interactions*** (e.g. social media) that make it possible for companies to engage in dialog with customers to build brand loyalty.
•***Leveraging cloud based services*** that enhance a wide range of functions including customer relationship management, information management and customer payments.

Source: World Bank enterprise survey of South Africa, 2007; Dalberg Analysis; * Based on growth of internet penetration in South Africa 2006-2010

2 *rther, lessons from global examples suggest that access and affordability* initiatives can additionally drive demand within the SME sector by reducing the cost of access to finance, increasing access to information and through the development of customized solutions.

Lessons from global examples

- A review of over 60 interventions supporting SMEs highlighted suggests that solutions which drive down costs of device and connectivity as well as access to appropriate solutions will drive demand.
- **Affordability interventions**: With regard to affordability, increased competition in the sector (e.g. DRC, Kenya, Uganda) has had an impact on the ability of SMEs to leverage internet services but, additionally, targeted solutions such as temporary VAT subsidies also drove growth (Turkey).
- Additionally, the role of e-payment and mmoney services (e.g . M-Pesa in Kenya) has been noted as helping SMEs lower transaction costs associated with formal banking (or lack of banking services)
- **Access to relevant content:** Opportunities to drive access to information and develop customized solutions were noted as key drivers of demand.
  - Access to information such as market pricing, labor, and information services have shown promise particularly in agriculture
  - Customized solutions: App labs such as the Grameen App Lab in Indonesia and the SME Application Development Centre Netherlands highlight the potential for customized solution development. The Netherlands centre formed through a PPC and focuses on specific sectors of the economy (e.g. hotels, restaurants, health). In Indonesia and Uganda, the Grameen Foundation has partnered with the private and public sector for its Application Laboratory (AppLab) Initiative that develops 3G applications for the poor and small businesses.

Implications:

- Lowering the cost of connectivity positively impacts both SME and consumer usage but is more likely to be effective when delivered in conjunction with solutions that meet specific SME needs such as access to market information, improved engagement with suppliers and access to business development services.
- Beyond access to basic web and email, appropriate solutions for SME are still under development and therefore, **investment in app/service development** will should be prioritized. Financing for content creation can be spurred by government who has already stated SME growth as a national priority.

Source: Dalberg Analysis of >100 global initiatives from relevant literature; Note: majority of cases falling across multiple categories.

3

For South Africa, a number of socio-economic and demographic factors will influence the growth of the SMEs sector by 2030.

Key trends influencing population by 2030…

750-6M

Est. no of SMEs in South Africa (including formal and informal)

+10M

people living in cities (~70% urbanization)

-2.5M

people living in rural areas

Immigration

from other African countries

Emerging middle class

will continue to grow

…will also influence the need and opportunity for ICT/ broadband related services amongst SMEs

Livelihoods

- Unemployment and the role of the informal economy will continue to influence the presence of SMEs and the need for appropriate business solutions.
- Immigration and urbanization will influence growth of **SMEs;**
- Government's emphasis on the role of SMEs in the economy will increase demand for appropriate solutions

Financial and business management services

- Access to appropriate financial and business management services (such as cloud computing, payments, credit, loans and insurance will be critical for growing SMEs)
- Strong and fluid market place for business development services (BDS) is needed due to low awareness and inconsistent quality.

Source: National Development Plan; Dalberg analysis; *Gates Foundation and IFAD Report, **AfDB Middle class

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3

Given these trends, emphasis should be placed on the provision of both basic internet services (web and email) as well as customized services (in particular financial services platforms and customized business management solutions.

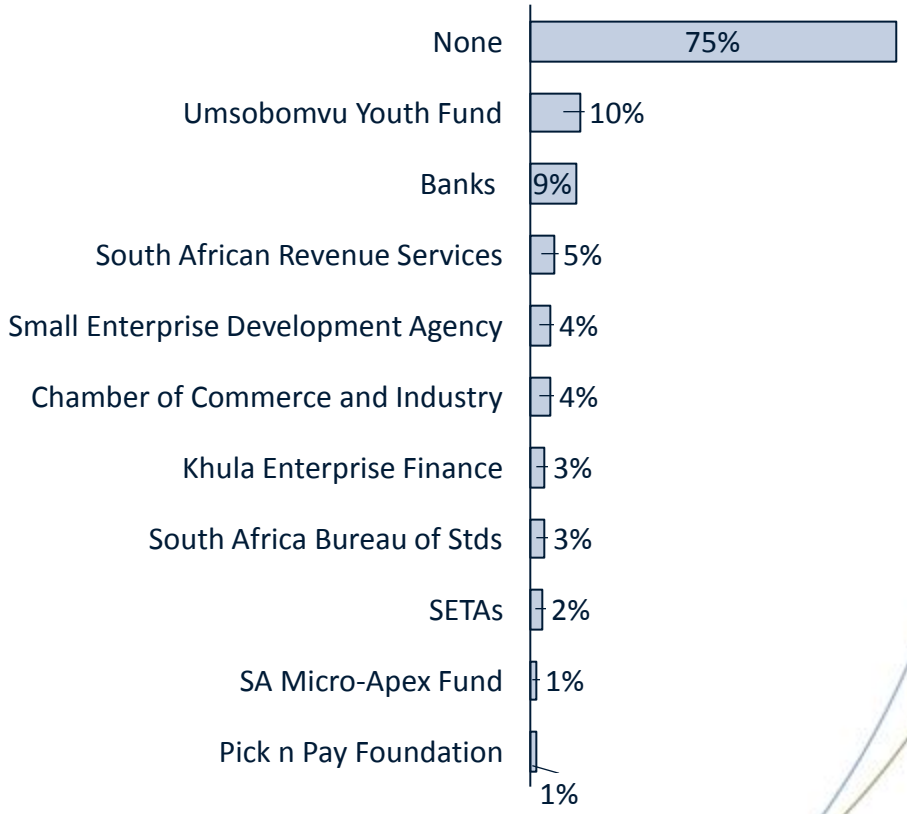
Horizons for ICT Impact	Basic telecoms *(e.g. mobile or fixed)*	Basic internet services *(e.g. web and email)*	Customized broadband solutions (e.g. *cloud computing, apps, business services)*
Contribution to the value chain	• Access to customers • Time savings; logistics • Workflow management	• Customer management • Access to markets • Ease of doing business – registration, etcZ	• Better customer information • Access to markets • Ease of doing business – payments, financial and supply chain management, etc.
Opportunity to drive additional growth	**LOW:** SA has >100% penetration but pricing and content may offer opportunity for more appropriate use	**Medium:** WB data indicates that only less than half of SMEs use web and email but those who do grow 100% faster	**HIGH:** Customized solutions are in early stages but showing significant potential for impact. But there is a clear correlation between networked readiness and national competitiveness
Examples:	**Micro entrepreneurs managing customers and scheduling**	**Local B&B advertising location and availability on website**	**SME businesses using applications to track customer relationships or supply chain management**
Potential interventions to drive demand		**Targeted government subsidies to address cost of connectivity and device**	**Innovation centres dedicated to SME application development**

World Bank, Qiang 2009; Note: The y axis represents the %-points increase in economic growth per 10-%-point increase in telecommunications penetration. All results statistically significant at the 1% level except for those for broadband in developing countries, which are significant at the 10% level

3 Illustrative example: Access to business development support. Currently there is a significant disconnect between providers and business owners suggesting an opportunity to correct information asymmetry with an online market place for providers

Main sources of business information for small business owners (Finscope, 2010)

Awareness of support organizations – Percentage of business owners (Finscope, 2010)



- 75% businesses unable to name any BDS provider
- **94% of small business owners have never used any support organisations**
- Business owners who did make use of support organizations were **more likely to get advice on starting-up**

Source: FinScope South Africa Small Business Survey 2010.

Encouraging SMEs growth will unlock untapped demand and further support a critical mass of online users.

Aspirations for 2020

Industry related access and services that will enable growth and job creation through the effective use of ICT/BB. **Specifically, SMEs**

Recommendations to drive demand

Establish centres/initiatives dedicated to SME applications development (e.g. in Netherlands SME Application Development Centre) where publicly funded centres are connected to both the business community as well as private funding of ventures.

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Financing from ICT Charter requirements (5% of after tax profit to promote black owned enterprises) is uniquely positioned to drive SME demand.

Source: Human Sciences Research Council; Kleeman, Michael expert opinion; Dalberg analysis.

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The South African government should examine best practice on eGov services and engage with the private sector to increase knowledge of services and benefits

1

Key barriers to internet use in SA

- Allocation of funds within existing budgets may be an issue for small municipalities. Though affordability is not the key barrier to unlocking gvt demand[2].
- Key challenge for government links to understanding and identifying appropriate solutions that are aligned with objectives of cost effectiveness and policy goals.

2

Learning from global examples

- Existing literature suggests that digital literacy initiatives have been largely ineffective demand generators[5].
- Significant number of access initiatives focused on data analytics for planning purposes. These initiatives cut across gvt departments, e.g. managing healthcare appointments in Sweden and using real time data for response efforts in Pakistan.

3

Demographic trends[1 f] for SA

- Rapid ***urbanization*** (10million more people in cities ~ 70% of population by 2030). Increase in ***immigration*** from other African countries.
- By 2030, nearly 7.3M people will be living with HIV. Increase in HIV+ population (as well as non-communicable diseases) will increase need for **health and disease management**

Recommendations:

Government must **prioritize and aggregate demand** in order to 'crowd in' private sector solution development. For example:

•**Driving online administration of services and leveraging data analytics** (e.g. school/exam registrations, NHIS registration, social grant or voter registrations, HANIS, simplified tax registration to drive SME growth); strengthen alignment with and access to epayments systems

Align USIF initiatives with initiatives to improve **content development** (e.g. Creation of an SA EduTech Fund content fund to drive Investing in connecting schools and driving eContent: Providing internet access to schools and learning centres, e.g. Malaysia Smart-school initiative

Sources: Footnotes 1: National Development Plan, 2012; Footnotes 2: DoC website news 2012 & ICT Indaba 2012; Harris, Lance 2011, *Steady spending, slow progress for government ICT,* Brainstorm Magazine; Footnotes 3: Dalberg analysis of various other sources. (See detailed Excel database.);

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1 broad view of the South African context suggests that knowledge of services and benefits as well as content relevance are two significant barriers to government demand

Barriers to demand		Intensity of barrier	Observations
Affordability	• Cost of device • Cost of connectivity • Cost of content		While allocation of funds within existing budgets may be an issue, overall, affordability is not the key barrier to unlocking government demand. The South African government has acknowledged the need to spend on ICT infrastructure[1]. Government ICT spending is growing at a faster rate than private sector technology spending.[2] This, together with the fact that the DoC has committed to delivering 100% BB in South Africa, means that total cost of connectivity is unlikely to be a major demand barrier for government.
Access	• Presence, speed, and reliability of connection • Availability of content • **Relevance of content/ services**		In general government should have access to high quality connections which, in South Africa, are fast enough to host a wide variety of services. In rural municipalities however, this might not be the case.
Awareness	• **Knowledge of service and benefits** • **Digital literacy/ capacity**		Rampancy of use of internet related services when affordable and relevant (e.g. numerous mobile phone applications[3]) suggests that South Africans in general, already have fairly strong awareness levels. However, evidence from literature suggests that governments, especially smaller municipalities are often unaware of both the benefits and costs of implementing ICT systems[4]. Existing literature suggests that digital literacy initiatives have been largely ineffective demand generators[5].

Key barriers for engaging with government at an anchor tenant of broadband services are 1) limited understanding of appropriate solutions that will drive cost effectiveness and policy goals and 2) fragmented procurement of pilot and small scale services. There is a clear need for government to move from pilot projects to scale by ***aggregating demand and procuring services accordingly.***

Very strong barrier **Strong barrier** **Neutral impact** **Low barrier** **Not an issue**

Source: Footnotes 1,2, 4: DoC website news 2012 & ICT Indaba 2012; Harris, Lance 2011, *Steady spending, slow progress for government ICT,* Brainstorm Magazine; Footnotes 3: Adapted from The Global Information Technology Report 2010-2011, World Economic Forum and Measuring the Information Society 2011, ITU ; WB Broadband strategies Handbook 2011; World Bank Enterprise Survey, SA data 2010; Footnotes: 5: Dalberg Analysis of >100 global initiatives from relevant literature; Dalberg interviews with industry experts from the South African Institute for Software Engineers.

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2

Lessons from global examples: Initiatives focused on improving access to relevant content are important but are most impactful when combined with efforts to increase government awareness of available services and potential benefits

Learning from global examples

- A review of over 50 initiatives focused on increasing government demand showed that access initiatives for the public sector are far more prevalent than those addressing affordability. This likely reflects a lower prioritization of affordability as a driver of demand for government, which confirms our observations for South Africa.

- According to the UN's eGov 2012 Survey, trends in the use and development of eGov services include: access in multiple languages, services related to education, health, social welfare, finance, labor and the environment in a range of formats from static information to downloadable forms to updates via email, RSS newsfeed or mobile messaging. South Africa currently performs poorly in terms of its eGov services with e-service delivery only extending to 40% . This is relatively poor vs. other peer countries (e.g. e-services for Malaysia and Columbia sit at 69 and 74% respectively.) Largely inhibited by weak infrastructure, South Africa has fallen in the UN's Global eGov ranking both between 2008 and 2010 and again in 2012.

- Successful investments aimed at improving access have also focused on data analytics in order to help government better collect and analyse information internally for planning purposes. E.g. managing healthcare appointments in Sweden and analytics to assist in data response efforts in Pakistan. In the South African context the South African Revenue Service, SARS, is a best-practice model for dramatically improving efficiency through investment in technology (more than 2.2 million South Africans file their taxes online and these are normally processed within 24 hours)[1].

Implications

Government should focus on extending successful pilots for scale and focus on service delivery such as service registrations (NHIS, school exams, taxes, voting) and transactional services (taxes, social welfare) …the latter being key to building a foundation of active online users across the economy.

e.g. South African government has made substantial ICT funds available - government spending on ICT is growing at a faster rate than private sector technology spending. However, much of this spending is on basic infrastructure for government departments, such as email and collaboration tools and not from development-related projects. Many of South Africa's high profile ICT initiatives such as the Department of Home Affair's "Who Am I Online?" project or HANIS (digital ID) have stalled– it is crucial that these sorts of projects are fully implemented.

Government must also recognize its role as an aggregator of demand in order to spur private sector investment.

Source: Dalberg Analysis of >100 global initiatives from relevant literature; Note: majority of cases falling across multiple categories;

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3

In the context of changing socio-economic and demographic trends, government will need to recognize the demand for cost effective and efficient public service administration.

Key trends influencing population by 2030…

…will influence the need and opportunity for ICT/ broadband related services.

+25% adults

(25-45 yr) population **(+4M)**

+10M

people living in cities (~70% urbanization)

-2.5M

people living in rural areas

Immigration

from other African countries

7.3M

people living with HIV (and other NCDs)

Emerging middle class

will continue to grow

Demand for cost effective and efficient government public service administration can be strengthened through broadband/ICT solutions

- Increased urbanization will require strong management of public administrative services by government
  - E.g. home affairs national identity services (HANIS), NHIS registration systems, online tax payment systems
- Financial services provided by government including social grants will continue (e.g. HIV) and require cost effective systems to implement
- Increased urbanization will continue to strain public health systems and could benefit from solutions that shift responsibilities and decentralize care
- Roll out of national health insurance system will require strong focus on building national identity and registration systems.

Source: National Development Plan; Dalberg analysis; *Gates Foundation and IFAD Report, **AfDB Middle class

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Developing government as an anchor tenant will unlock untapped demand and further support a critical mass of online users.

Aspirations for 2020

Industry related access and services that will enable growth and job creation through the effective use of ICT/BB. **Specifically, government.**

Recommendations to drive demand

Government must **prioritize and aggregate demand** in order to 'crowd in' private sector solution development. For example:

•**Driving online administration of services and leveraging data analytics** (e.g. school/exam registrations, NHIS registration, social grant or voter registrations, HANIS, simplified tax registration to drive SME growth); strengthen alignment with and access to epayments systems

Align USIF initiatives with initiatives to improve **content development** (e.g. Creation of an SA EduTech Fund content fund to drive Investing in connecting schools and driving eContent: Providing internet access to schools and learning centres, e.g. Malaysia Smart-school initiative

Source: Human Sciences Research Council; Kleeman, Michael expert opinion; Dalberg analysis.

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Agenda

Executive summary

Context and approach

Recommendations

- Enabling individual digital citizenship
- Promoting economic growth of key ICT/broadband enabled industries
- **Driving ICT/broadband sector growth**

Recommendations for demand side investment

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Identifying niche opportunities will drive competitiveness in the development and export of ICT products and services but will depend on a number of factors.

Aspirations for 2020

3 Industry access that will position South Africa to be globally competitive in key ICT industries ***(Demonstrate leadership with ICT products or services)***

Recommendations to drive demand

Identifying opportunities for South Africa to strengthen competitiveness in the production and export of ICT goods and services should be considered in the medium term but recognizing that SA has a number of strengths to build on.

Private and development finance can support the exploration of niche opportunities.

Source: Human Sciences Research Council; Kleeman, Michael expert opinion; Dalberg analysis.

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3 Identifying niche opportunities drive competitiveness in the development and export of ICT products and services will depend on a number of factors.

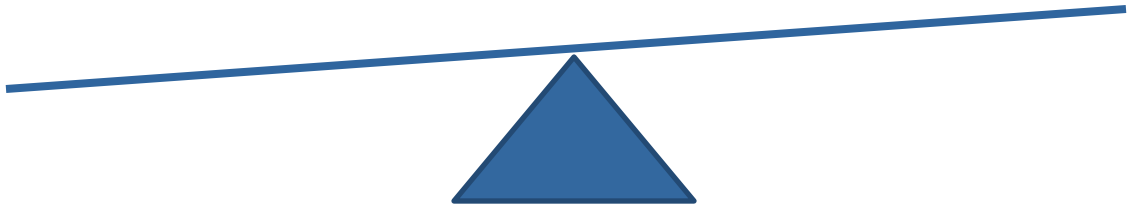
- *Identifying opportunities for South Africa to strengthen competitiveness in the production and export of ICT goods and services will likely be influenced by a number of factors.*

Where is South Africa currently well-positioned to improve competitiveness?

- Access to top-tier research institutions and universities as well as skills and capabilities in specific niche fields (e.g. software or application development)
- Existing success creates access to networks and compelling role models. (e.g. Mark Shuttleworth); prove you can do it and inspire those that want to)
- Infrastructure (PE/VC environment) access to capital
- Soft factors - Conducive environment: Climate and surrounding environment (e.g. Pretoria or Stellenbosch)

Where is South Africa less competitive on these dimensions?

- Affordability of accessing internet services
- Speed, reliability and quality of internet access
- Ability to align skills and capabilities with high demand markets and industries
- High inequality in terms of health, edu, income
- Geographic dispersion with relatively small population
- Weak trade profile with limited contribution from exports



Not all of the challenges need to be addressed. Rather, South Africa can selectively address these issues in order to unlock opportunity.

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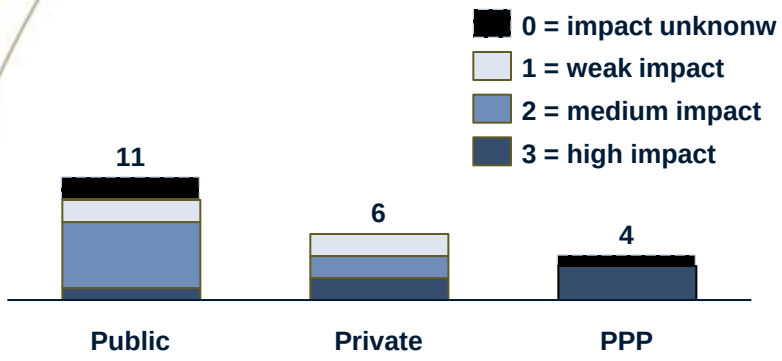
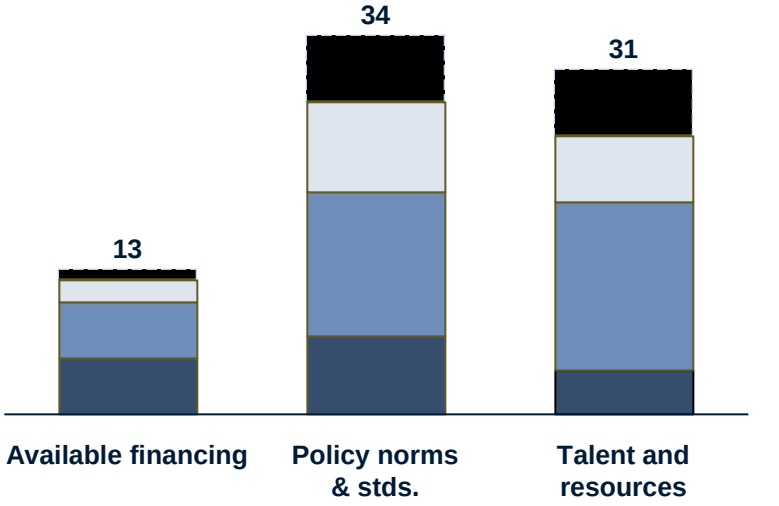
3 Cross-cutting initiatives can lay important foundations for other demand drivers. Of particular important to South Africa, is developing a comprehensive and cohesive national ICT vision

Global review of enabling environment initiatives by investment model and level of impact



Global review enabling environment sub-drivers by investment model and level of impact



Drivers of demand	Sub-drivers	Intensity of barrier for *SA*
Enabling Environment	• Available financing • Policy norms and stds. • Talent and resources to develop content	

- A global review revealed that it is important for ICT initiatives to be incorporated into a broader framework of ICT policy that aims to simultaneously address access, affordability and awareness issues across different sectors of society. Examples of these programs include Korea's Information Infrastructure Initiative, Malaysia's 2020 ICT Vision and Brazil's "Brazil Connected" program. In other words, policy norms and standards form a very important component of the overall effectiveness of demand initiatives.
- Demand for ICT in South African is hampered by the lack of a comprehensive national ICT vision. This has resulted in fragmented systems within government and a lack of coordination between government departments. For example, experts have claimed that if the Department of Home Affairs were to share its population register, it could streamline delivery of other services such as unemployment insurance.
- Other broad-based policy norms and standards such as the ease of doing business can have a large impact on demand. For example excessive red tape can stifle cross-cutting demand initiatives.

Source: Dalberg Analysis of >100 global initiatives from relevant literature; Note: majority of cases falling across multiple categories;
Footnotes 1: Harris, Lance 2011, *Steady spending, slow progress for government ICT,* Brainstorm Magazine

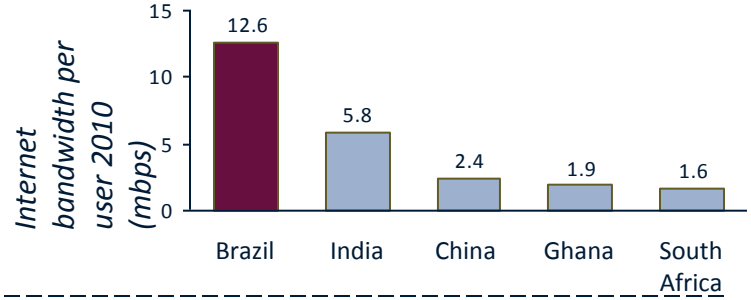
3 Building ICT leadership in the medium term could parallel examples such as Curitiba, Brazil, where targeted investment in a destination location drove economic growth (1/3)

Curitiba, Brazil is an example of a successful attempt on the part of government to become a hub for IT services, innovation and entrepreneurship

Why is Curitiba considered an IT success story?

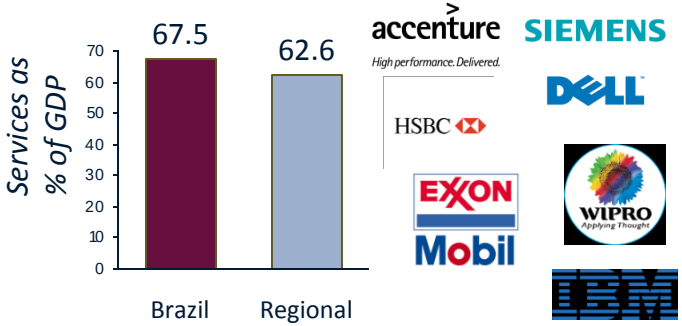
INFRASTRUCTURE

- **Fast Broadband:** Average peak connection speed of 12.6 Mbps (Q4 2010), fastest in Latin America.
- **Telecom Infrastructure:** Good network of fiber optic cables



INVESTMENT AND GROWTH

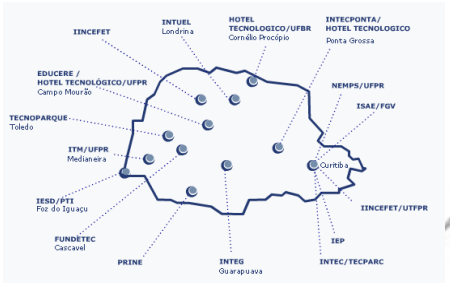
- **Business investment**: Over 260 active companies (15 Capability Maturity Model Integration - CMMI - certified)
- **Wealth creation:** Fifth richest city in Brazil. 65% of GDP value added from services and commerce
- Projected to be **amongst the world's top 100 richest cities** by 2020



HUMAN CAPITAL

- **Jobs: 300K** IT/BPO workforce; **20K new IT/BPO** graduates added each year
- **IT and Business Expertise:**
  - 6 **software clusters** and 8 **technology incubators**
  - Software cluster corridor linking Curitiba with neighboring city Ponta Grossa
  - >30 **software specialties**;
  - >50 areas of **business expertise**

Map of Technology incubators in Curitiba and surrounding regions



Source: Nearshore Americas Curitiba Report 2012; KPMG Exploring Global Frontiers 2009; Internet bandwith – ITU 2010 Indicators database; Dalberg analysis.

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3 Building ICT leadership in the medium term could parallel examples such as Curitiba, Brazil, where targeted investment in a destination location drove economic growth (2/3)

The path to realizing this success included a range of investments in infrastructure, FDI and human capital

How has Curitiba achieved this success?

Infrastructure investments

- **Provided reliable and fast broadband** from regional and national telecom providers
- **Established key areas (Technopark):** 5 million sq. meters of space to attract and connect public and private tech institutions, R&D companies and universities
- **Ensured quality assurance/ reliable power supply:** Very rare outages. Itaipu bi-national in Parana is largest hydroelectric power plant in Latin America.
- **Ensured easy access** to and from key cities Sao Paulo and Rio via road and air.

Regulation and policy

- **Reduced sales tax**
- **Instituted exemptions** on real estate
- **Provided VAT credits** for export oriented companies

Human capital

- **Aligned Technopark** with key educational institutions such as Universidade Technologica and fully integrated into business environment. The park was therefore connected to centers of learning in order to absorb and facilitate skills development and well connected to the business world so that it was able to attract necessary funding.
- **Providing incentives** for students to study science or engineering overseas. New Brazilian education initiative called “science without borders”

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Source: Nearshore Americas Curitiba Report 2012; KPMG Exploring Global Frontiers 2009; Dalberg analysis.

Building ICT leadership in the medium term could parallel examples such as Curitiba, Brazil, where targeted investment in a destination location drove economic growth (3/3)

…and, beyond IT services and infrastructure, Curitiba tapped into its attractiveness and high quality of life.

Leveraging location and quality of life factors

Proximity to Rio de Janeiro, Sao Paulo and Buenos Aires

Curitiba's geographic location and city attributes have also contributed significantly to its success with IT/BPO services

- Winner of the **Sustainable Transport Award 2010** (Transport and Development Politics Institute)
- Listed in the **Greenest Cities** Index (Reader's Digest)
- **Low Cost** of Living
- **Time zone alignment** with North America and Europe

As such Curitiba is recognized as:

- Amongst the world's **most significant offshore business locations** (KPMG)
- **One of the 5 best cities for doing business in the Americas** (America's Economy Magazine)

Source: Nearshore Americas Curitiba Report 2012; KPMG Exploring Global Frontiers 2009; Dalberg analysis.

Agenda

Executive summary

Context and approach

Recommendations

- Enabling individual digital citizenship
- Promoting economic growth of key ICT/broadband enabled industries
- Driving ICT/broadband sector growth

Recommendations for demand side investment

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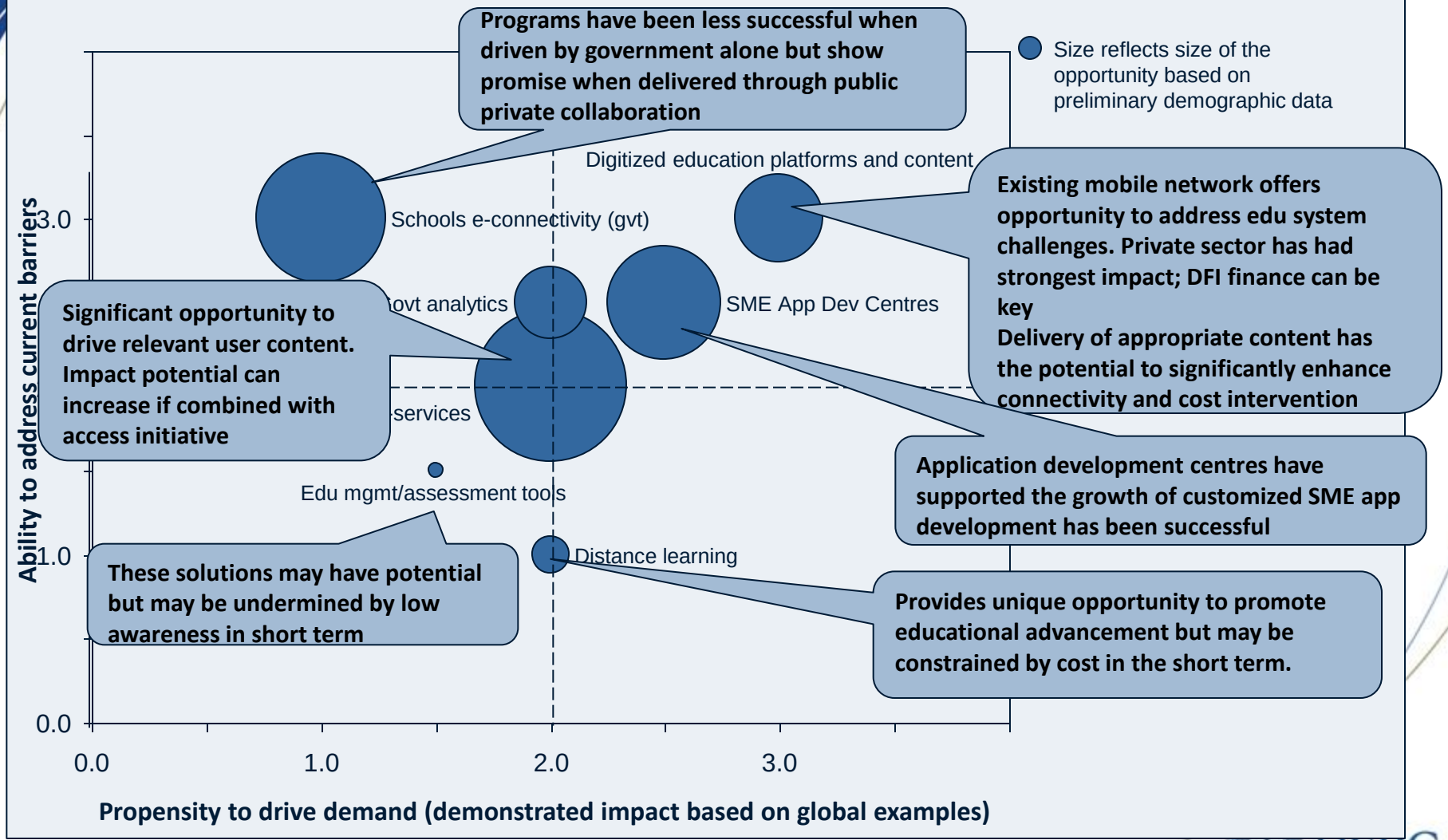
Considering 1) key barriers, 2) potential for impact based on global examples and 3) potential market size, suggests prioritization of opportunities to drive demand

Illustrative prioritization of opportunities to drive content /services



Source: Global literature review; interviews with industry professionals; Dalberg analysis

A look at successful demand side interventions suggests trends in the roles of public and private finance actors in catalyzing, implementing and financing.

User/ key barrier	Catalyst	Implementer	Financer	Examples of demand driver interventions
Consumers				
Content relevance	Private & Public (or DFI)	Private	Private & Public	Ithala SMS communications (South Africa); IFFCO Kisan Sanchar (India); Nokia Ovi Life Tools (Nigeria). Young Africa Live (South Africa)
Cost of connection	Public	Private	Private & Public	Telecentre program (Colombia)
Cost of device	Private & Public	Private	Private & Public	Vox Orion Smart School Technology (South Africa);Google IDEOS smartphones (Kenya); Distributing low cost computers (Portugal)
SMEs				
Content relevance	Private (or DFI)	Private (or DFI)	Private & Public	SME application development (Netherlands, Indonesia)
Content platform	Private	Private	Private	Warana Unwired (India)
Cost of connection	Private & Public	Private	Private & Public	Increased telecoms competition (Kenya, DRC, Ethiopia); techpark for small businesses (Mauritius)
Government				
Knowledge of services/benefits	Private	Private & Public	Public	E-filing of taxes and E-procurement (Chile); Kenya mHealth Working Group
Relevance of services/benefits	Private & Public	Private & Public	Public	Digitizing Home Affairs / HANIS (South Africa); Government analytics and data mining (various);
Policy norms/standards	Private & Public	Public	Public	Korean Broadband initiative (South Korea); 24hr approval process (Rwanda)
ICT Sector				
Not a major source of demand. Will provide new solutions to other sectors and help drive innovation and platform relevance.				

ANNEX:
LIST OF SELECTED DEMAND SIDE INTERVENTIONS

Further detail on demand-driven initiatives mentioned in presentation

Initiative	Description	Location	For more information, please see:
Competitive market for tariffs and mobile money transactions	More operators allowed to enter the Kenyan industry, resulting in a reduction in end-user tariffs due to low termination rates, enhancing affordability and increased uptake by a population that was not previously served.	Kenya	Waema T et al (2010). "Kenya ICT Sector Performance Review 2009/2010." Research ICT Africa, *Towards Evidence-Based ICT Policy and Regulation,* Vol. 2, Policy Paper 10, p22
Low cost computer project	Portugal has launched two successful low-cost computer projects as part of its government program to promote broadband—the e-escola (e-school) program and the e-escolinha program. The e-school program, initiated in June 2007, distributes laptops with broadband Internet access to teachers and secondary school students. The laptops are sold by telecommunications providers at EUR 150 (USD 220) with a EUR 5 discount over the basic monthly fee for 3, 5, and 7.2 Mbit/s connections.	Portugal	World Bank, *Facilitating Broadband Development: Funding Options*, August 2010; *Escalões da Acção Social Escolar* (ASE), available at http://eescola.pt/e-escola/oquee.aspx; Referenced from: Broadband Strategies handbook InfoDev 2011.
Indotel community informatic initiative	Coordination between regulatory authority and government to promote broadband and the use of computers in rural areas. Indotel provides entire technical infrastructure and in 2007 launched the broadband connectivity project to provide telephone access and broadband internet through internet cafes.	Dominican Republic	Adapted from Edwin San Román, *Bringing broadband access to rural areas: a step by step approach for regulators, policymakers and universal access program administrators* 2009, Referenced from: Broadband Strategies handbook, InfoDev 2011.
National PC Project	In order to increase the number of PC owners and also to enhance the use of licensed software, the MCIT, in cooperation with Ministry of Education, HP, and Microsoft, launched a joint project called National PC. The total cost of a computer together with the software offered under the project is as much as 40% lower than market prices.	Azerbaijan	Dutta, Soumitra and Bilbao Osorio, Benat, Global Information Technology Report, 2012, World Economic Forum, p156
Malaysia - Universal Service Funds	In 2010, the Malaysian government spearheaded activities aimed at reaching 50 percent of households with personal computers (PCs) and Internet access. They are utilizing Universal Service Funds (based on a 6% tax of telcos) to subsidize 1 million netbooks for students and connectable rural low-income families and to establish projects to improve broadband coverage across specific underserved areas of the country.	Malaysia	Dutta, Soumitra and Bilbao Osorio, Benat, Global Information Technology Report, 2012, World Economic Forum, p82.
Colombia telecentre program	First Universal Access and Service fund to successfully implement a competitive bidding scheme for privately operated telecentres. Bidding scheme from private sector maximized opportunities for economies of scale by packaging telecentres together in large numbers. Telephony programme funded by a combination of revenues generated from license fees, and a 5 percent revenue levy that is paid by Telecom, the national operator	Colombia	Communications Compartel Case Study; Global Information Society Watch Colombia 2007 Focus accessed from http://www.giswatch.org/en/country-report/civil-society-participation/colombia

Further detail on demand-driven initiatives mentioned in presentation

Initiative	Description	Location	For more information, please see:
Nokia - Ovi Life Tools	Nokia introduced its Ovi Life Tools in November 2010 providing information on health, agriculture and education. Info service covers all 36 states in Nigeria, across healthcare, agriculture, education, and entertainment. Nokia offers svc through two basic handsets at affordable monthly prices, with services available nationwide in three relevant languages (English, Hausa, pidgin English)	Nigeria	Analysys Mason (Feb 2011), report for GSMA. "Assessment of economic impact of wireless broadband in Nigeria", p21
Project K-Nect - using mobile broadband to improve educational outcomes for at-risk students	Project K-Nect was launched in 2008 to determine whether smartphones with digital algebra I content and 24/7 connectivity could improve educational outcomes of students who scored poorly in math. Qualifying students received 3G-enabled smartphones to wirelessly connect to supplemental math content aligned with their teachers' lesson plans, relevant web-based resources, and online collaboration tools. The devices also enabled students to communicate with their teachers and engage in peer learning	US/Canada	Project K-Nect Evaluation Report July 2007, available at http://www.tomorrow.org/docs/Project_k-Nect_Evaluationreport_Final_Jul7.pdf. Cited by Dutta, Soumitra and Bilbao Osorio, Benat, Global Information Technology Report, 2012, World Economic Forum, p73.
Encourage a competitive marketplace	More operators allowed to enter the industry, resulting in a reduction in end-user tariffs due to low termination rates, enhancing affordability and increased uptake by a population that was not previously served. E.g. DRC has six competing mobile operators while Ethiopia has only one.	Kenya, DRC, others	*The Economist* 2005 and ITC 2004. Cited by Wellenius B (2006). "(Ch. 3) Extending communication and information services: principles and practical solutions", World Bank 2006 Informations and Communications for Development: Global Trends and Policies, p43
E-Financial Services, including common platform efforts – E-Zwich.	The Ghanaian financial sector has few e-financial services which are mostly in their formative stages. The main nation-wide e-financial service is the electronic payment system called E-Zwich.	Ghana	Frempong G (2010). "Ghana ICT Sector Performance Review 2009/2010." Research ICT Africa, Towards Evidence-Based ICT Policy and Regulation, Vol. 2, Policy Paper 8, p22
M-Pesa	M-Pesa, had over 5 million customers and 3400 agents countrywide by July 2009. M-Pesa is considered one of the best global innovations in mobile telephony and has made a huge difference to the unbanked population in Kenya.	Kenya	Waema T et al (2010). "Kenya ICT Sector Performance Review 2009/2010." Research ICT Africa, *Towards Evidence-Based ICT Policy and Regulation*, Vol. 2, Policy Paper 10, p27
Center for SME apps development	Centre for the development of local applications for SMEs. Half publicly funded and projects require having private developers.	Netherlands	EC, National Initiatives: Netherlands Broadband Land; Referenced from: Broadband Strategies handbook, InfoDev 2011, p. 155.

Further detail on demand-driven initiatives mentioned in presentation

Initiative	Description	Location	For more information, please see:
Grameen AppLab - mobile micro-enterpreneurs	In Indonesia, the Grameen Foundation has partnered with private and public sectors including Qualcomm in its Application Laboratory (AppLab) initiative. AppLab are establishing a multi-tier suite of data services to use existing SMS and increasingly 3G, to increase the incomes of the nation's poor. Key efforts include Village Phone Operators (VPOs), a social network of women entrepreneurs whom own and operate mobile micro-franchise businesses, and commercially available phones in collaboration with Deutsche Telekom.	Indonesia	Qualcomm Wireless Reach™ Project, available at: http://www.qualcomm.com/citizenship/wireless-reach/projects/entrepreneurship#indonesia---village-phone. Cited by Dutta, Soumitra and Bilbao Osorio, Benat, Global Information Technology Report, 2012, World Economic Forum, p74.
Warana Unwired	Warana Unwired helps sugarcane farmers with a mobile based system for disseminating information on prices, payment schedules, etc. This replaced an Internet and kiosk based system that fell into disuse Elsewhere in India (Kerala), fishermen once had to rely on local brokers with likely low prices in their home market but can now compare bids from local brokers while at sea or check the situation at nearby ports.	India	Dutta S and Mia I, Eds (2011). The Global Information Technology Report 2010-2011: Transformations 2.0, p73, p80
Universal and free ICT training supported by government.	Mauritius has targeted that relevant ICT literacy/proficiency programs are offered but also free. ICT facilities with broadband access are made available throughout the country. The National Computer Board (NCB) has, since Sept 2006, implemented the Universal ICT Education Programme, an initiative of the Prime Minister. One of the main objectives of the program is to train the population in Internet and Computing Core Certification, the internationally acknowledged computer proficiency course.	Mauritius	Dutta, Soumitra and Bilbao Osorio, Benat, Global Information Technology Report, 2012, World Economic Forum, p165
Analytics for disaster response	International Organization for Migration (IOM) applied analytics to enhance efforts to help millions left homeless by the worst floods in Pakistan's history. IOM is using analytics to better manage and share data with partner agencies providing emergency shelter, e.g., developing a structured data repository that can handle such analyses.	Pakistan	Dutta S and Mia I, Eds (2011). The Global Information Technology Report 2010-2011: Transformations 2.0, p94
Analytics for transformation of government services	One Example: patients in Sweden are being given full authority to choose healthcare providers, with analytics enabling planning to meet demand for different provider allocation and to provide information to patients	- Sweden, UK - Norway in partnership with Eritrea, Uganda, Albania, Malawi, Moldova	Dutta S and Mia I, Eds (2011). The Global Information Technology Report 2010-2011: Transformations 2.0, p93-94

Further detail on demand-driven initiatives mentioned in presentation

Initiative	Description	Location	For more information, please see:
WIZZIT mBanking in South Africa	WIZZIT, an m-Banking service and the only one in SSA at the time of research specifically targeting low-income consumers, has as its customer base the 16mln South Africans (48% pop) who lack or have difficulty accessing formal banking services. WIZZIT is virtual, without its own physical branches. The mobile platform allows P2P payments, money transfers, prepaid electricity purchase, and prepaid mobile airtime top-up.	South Africa	Ivatury G and Pickens M (2006). "Mobile banking and Low-income customers: Evidence from South Africa." Consultative Group to Assist the Poor / UN Foundation and World Bank, p2-4.
DfID Financial Deepening Challenge Fund; M-Pesa	Through the Financial Deepening Challenge Fund, DFID helped set up the pioneering service by matching Vodafone's/Safaricom's investment of £1 million.	Kenya	DFID (Oct 2007), "M-PESA: 1 Million Kenyans bank by phone". Available at http://webarchive.nationalarchives.gov.uk/+/http://www.dfid.gov.uk/Media-Room/News-Stories/2007/M-PESA-1-million-Kenyans-bank-by-phone/

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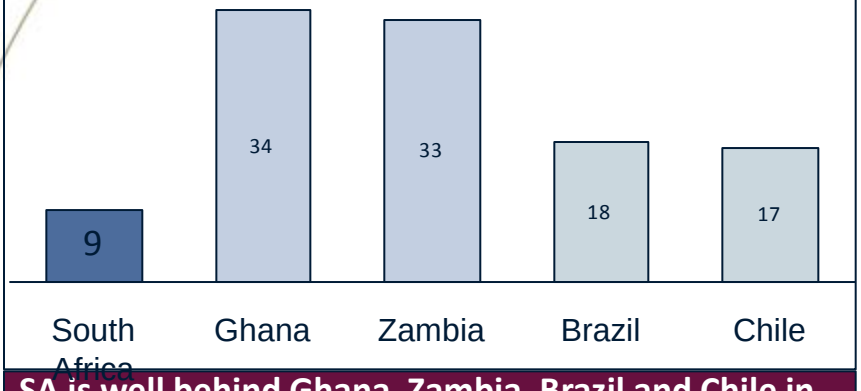
Trends in urbanization and unemployment will emphasize the need for entrepreneurial and SME growth, however, South Africa's success is low when compared to other emerging markets.

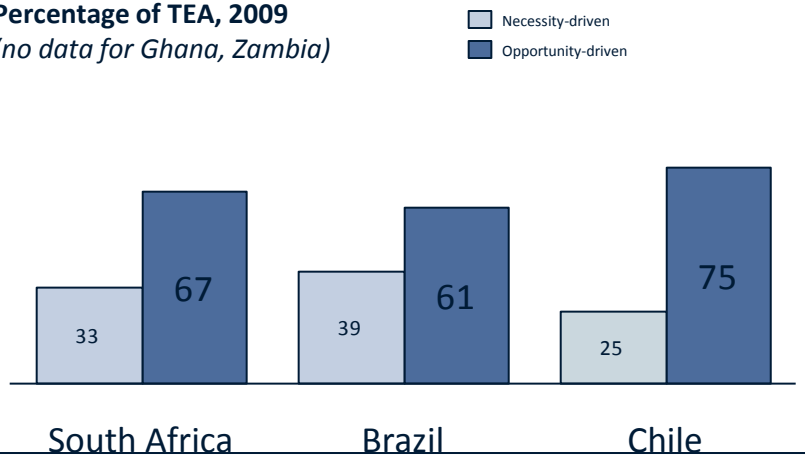
South Africa ranked 35th / 54 countries, and was below the average rate of 11.7 for all participating countries

Total early stage entrepreneurial activity (TEA*)
Percentage, 2010



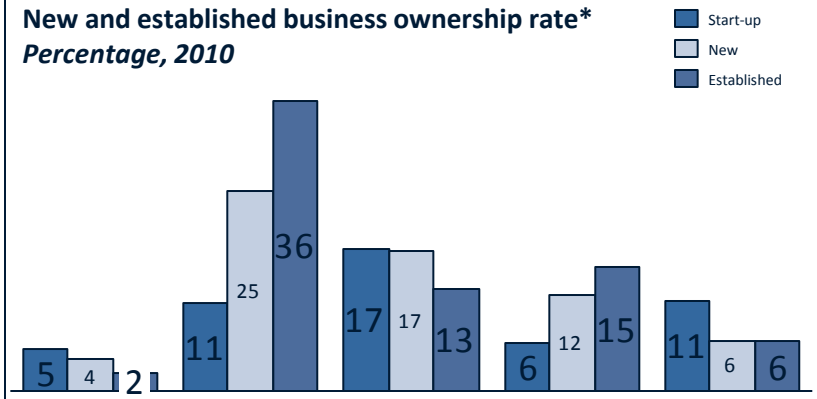
Necessity can be used as a proxy for "survivalist" businesses; South Africa is similar to others

Percentage of TEA, 2009
(no data for Ghana, Zambia)



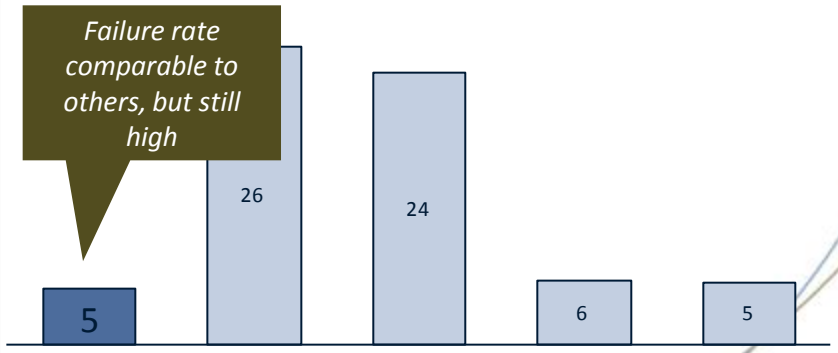
SA is well behind Ghana, Zambia, Brazil and Chile in its ability to foster successful new businesses

New and established business ownership rate*
Percentage, 2010



Failure rate of businesses is lower than countries with higher entrepreneurship activity

Discontinuation of business, 2010

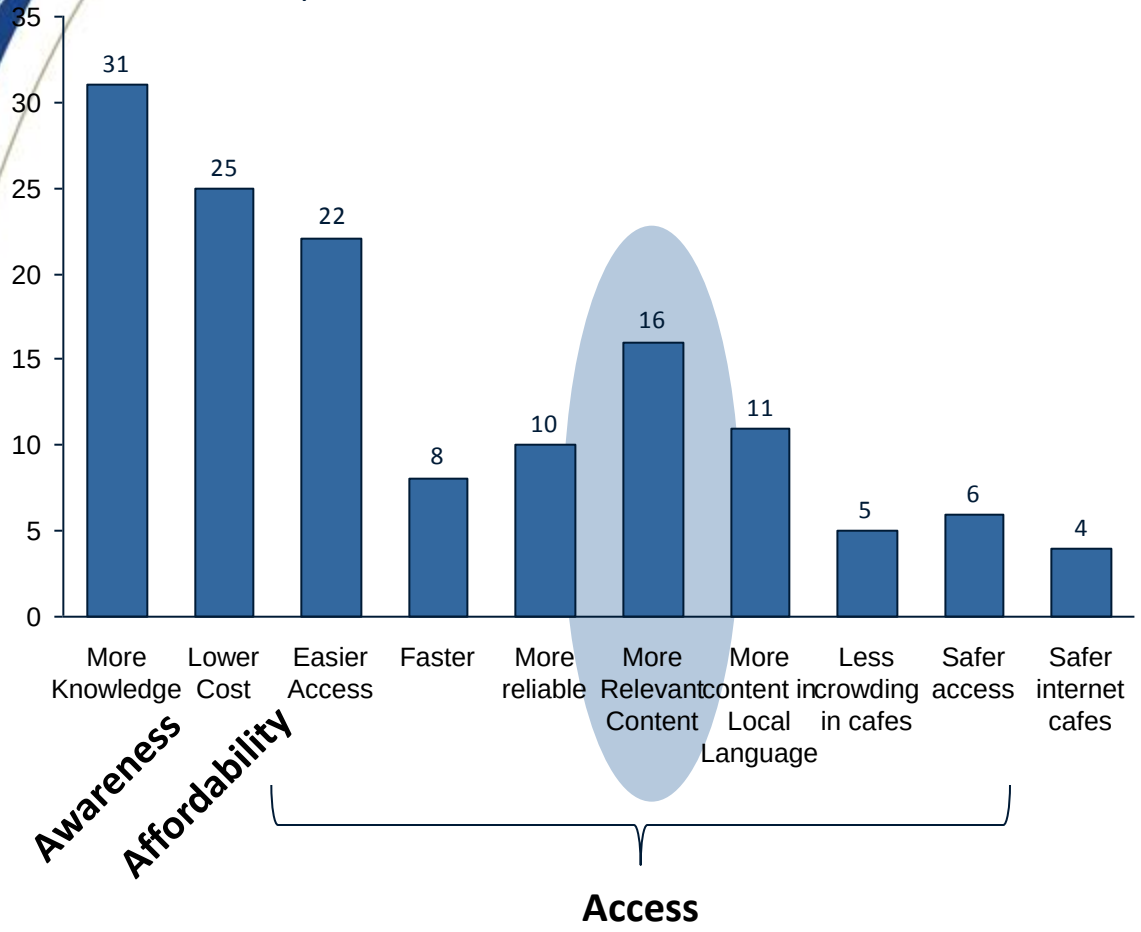


*Note: TEA rate measures prevalence of business start-ups and new businesses in the adult population (18 – 64 yrs). **New=percentage of adult population who are owner-managers for < 3.5 years, Established=paid wages for >3.5 yrs. Discontinuation:** the number of individuals who have discontinued a business. business in the last 12 months. Source: Herrington, M., Kew, J., Kew, P. *Tracking Entrepreneurship in South Africa: A GEM Perspective.* 2009., GEM Global Report 2010.

A Google study of 2000 users in South Africa suggests that the primary drivers and barriers to demand are predominantly related to access and affordability

Drivers of internet usage in South Africa for individuals currently not using the internet

% of total respondents; N =2000



Observations:

- Awareness was the most frequently noted barrier to internet usage, which could be a mix of capability and familiarity with internet enabled services.
- South Africa should seek to address awareness but this will likely come through initiatives aimed at developing more appropriate content and services that will attract users

Source: Google's Insight Africa database , 2011; 2000 interviews in South Africa
http://www.insightsafrica.com/#!place=category&cat=Drivers+%26+Barriers+for+Internet+Usage&qid=52036&filter=South+Africa

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