Potential Job Creation in the South African ICT Sector

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report prepared for the ICT Vision 2020 Investment Workstream

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“WHILE A GOOD CASE CAN BE MADE FOR ICT AS A FACTOR OF ECONOMIC DEVELOPMENT, HOW TO USE ICT COST EFFECTIVELY TO MEET PRIVATE AND PUBLIC OBJECTIVES REMAINS LESS CLEAR”

(World Bank 2009, p.9)
EXECUTIVE SUMMARY

• A demand side analysis is undertaken using 4 categories of demand for ICT and Broad Band:
  
  • Private Consumption (individuals)
  • Private Investment (Large and small firms)
  • Government Demand
  • Trade Demand (sale of ICT Enabled services)
  • The ICT sector is dealt with as a separate sector the size of which is dependant on demand from four above categories

• Demand is calculated in terms of increased output and sales derived from, and attributable to increased band access and decreased ICT prices. This output is translated into direct and indirect job creation

KEY FINDINGS

<table>
<thead>
<tr>
<th>Demand Source</th>
<th>Direct Job Creation</th>
<th>Indirect Job Creation</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Private Consumption</td>
<td>0</td>
<td>62 500</td>
<td>62 500</td>
</tr>
<tr>
<td>Private Investment (Large)</td>
<td>24 000</td>
<td>45 300</td>
<td>69 300</td>
</tr>
<tr>
<td>Private Investment (SME)</td>
<td>32 000</td>
<td>56 000</td>
<td>88 000</td>
</tr>
<tr>
<td>Government</td>
<td>1 600</td>
<td>26 000</td>
<td>27 600</td>
</tr>
<tr>
<td>ICT Sector</td>
<td>19 000</td>
<td>0</td>
<td>19 000</td>
</tr>
<tr>
<td>Trade Sector (BPO&amp;O)</td>
<td>58 000</td>
<td>89 000</td>
<td>147 000</td>
</tr>
<tr>
<td>TOTAL</td>
<td>134 600</td>
<td>278 800</td>
<td>413 400</td>
</tr>
</tbody>
</table>
EXECUTIVE SUMMARY

• The report finds that the impact of 100% broadband coverage anticipated in the ICT compact falls well short of the 1 million job goal.

• Even by increasing the size of the ICT sector by 30% only 413,400 jobs are anticipated to be created by 2020 of which only 134,600 are direct jobs.

• This emphasizes the point by the NPC that what is good for growth is not necessarily good for employment.

• HOWEVER the above figures are based on an extremely short time horizon – a mere 8 years, if the time horizon was expanded to 2030 exponential effects would be anticipated as critical mass is achieved domestically and as BPO&O expands.

• The greatest single source of job creation enabled by improved broadband coverage and improved pricing will be the ITES Trade sector which has the potential to contribute 700,000 jobs by 2030 if adequately supported.

• In the domestic market private consumption and the SME market will be major drivers of job creation.
1. ANALYSIS CHALLENGES
2. ECONOMIC LITERATURE REVIEW
3. APPROACH, METHODOLOGY AND ASSUMPTIONS
4. PRIVATE CONSUMPTION DEMAND
5. PRIVATE INVESTMENT DEMAND (LARGE FIRMS)
6. PRIVATE INVESTMENT DEMAND (SME’S)
7. GOVERNMENT DEMAND
8. ICT SECTOR
9. TRADE DEMAND
10. SUMMARY: JOB CREATION
11. STRATEGY
DATA ISSUES

• ICT and ICT related goods and services dispersed across multiple SIC codes
• Developed countries overcome data difficulties using enterprise level data (EU, US)
• In developing countries and for inter country comparisons data gap filled by:
  – consulting reports (e.g. McKinsey, Boston Consulting Group, large accounting firms)
  – country case studies
  – multi lateral organisation survey’s (e.g. World economic Forum, World Bank Investment Climate Survey)
• Most analysis of impact of ICT on economy is heuristic and anecdotal
• In South Africa Private sector research to fill data gap predominantly driven by telecom sector firms and is focused on revenue

ECONOMIC CAUSALITY ISSUES

• The demand for labour is DERIVED DEMAND. Firms only increase employment if sales increase and additional workers are required to produce increased output.
• To link increased broad band penetration and usage to employment requires that broad band penetration and usage be linked to increased SALES and OUTPUT first. Increased sales and output can only then be translated into potential job creation.

ATTRIBUTION ISSUES

• Theoretically and empirically linking the role of broad band to increases in output and sales is extremely difficult and hard to prove: e.g. Increased ICT and BB usage has been documented to increase productivity. Productivity increases may lead to lower overheads and increased profit taking and not necessarily increased sales and employment.
ANALYSIS CHALLENGES

- Most analysis focuses on relationship between broad band and GDP growth, export growth and GDP per capita growth NOT employment growth.

- Gap exists between the anecdotal, heuristic hype of consulting reports and world wide survey's and rigorous economic scholarly work concerning the relationship between broad band penetration and usage and job creation:

  **World Bank** (2006): “firms that use ICT more intensively increased employment 1.2% more than firms who did not.”

  **World Economic Forum** (2012): “a 10% increase in digitization decreases unemployment by 0.84%”

  **Katz** (2010): “productivity gains founded on increased ICT usage decrease employment as capital is substituted for labour”

  **Hagsten and Kotnik** (2010): “ICT does not have a statistically significant effect on employment growth at an industry level. Rather employment changes when output changes”
Policy focus regarding the role of ICT in the South African economy is also not altogether clear.

National Industrial Policy Framework and IPAP 1, 2 & 3: ICT sector plays an important cross-cutting role in improving co-ordination, productivity and competitiveness at an economy wide level. IPAP's are silent on the job creation potential of the ICT sector except to suggest 56,000 potential jobs through Business Process Outsourcing.

Department of Communications: only 2 targets in 2011 ICT Compact one of which is to 1 million jobs suggesting job creation is a major goal of ICT expansion programme.

National Planning Commission: “...while ICT may provide important direct opportunities for job creation, its' major contribution to economic development is to enhance communication and information flows that improve productivity and efficiency” (NPC, 2012, p.172)
ECONOMIC LITERATURE REVIEW

• Substantial literature exists on the impact of ICT on the economy both of a heuristic nature and of a scholarly nature. Understanding these impacts remains nascent and constrained by a lack of data, yet some interesting themes arise which are highly relevant in the SA context.

• Four Key themes:
  
  • Economic impacts of increased ICT and broadband usage are influenced by scale
  
  • The impact of a given investment in ICT and broadband are not universally consistent or automatic
  
  • Firms increase ICT and broadband usage for different reasons and with different outcomes
  
  • Some ICT urban mythology
AN ISSUE OF SCALE

World Bank Cross Country Analysis based on Investment Climate Survey (2009) finds that a 10% increase in broad band access creates a 1.21% increase in per capita GDP in developed (high income countries). The equivalent increase for developing countries (low income) is 1.38%. Suggests that developing countries enjoy greater per capita GDP effects of a 10% increase in broad band access than developed countries.

- However, the same study shows that for middle income countries (such as South Africa) there is no statistically significant relationship between a 10% increase in broad band access and GDP per capita. The World Bank argue this is because critical mass has not been attained in such countries.

- In Koutroumpis (2008), similar trends emerged.

<table>
<thead>
<tr>
<th>Category</th>
<th>Penetration</th>
<th>Example</th>
<th>Average %GDP increase due to 10% increase BB</th>
</tr>
</thead>
<tbody>
<tr>
<td>Low BB Penetration country</td>
<td>Less 10%</td>
<td>Greece, Portugal</td>
<td>0.41</td>
</tr>
<tr>
<td>Low BB Penetration country</td>
<td>10%-20%</td>
<td>Spain, UK, France</td>
<td>0.5</td>
</tr>
<tr>
<td>Low BB Penetration country</td>
<td>20%+</td>
<td>Finland, Sweden, Denmark</td>
<td>1.06</td>
</tr>
</tbody>
</table>
Booz and Company similar findings when researching the per capita benefits of a 10% increase in digitisation (2012, WEF)

<table>
<thead>
<tr>
<th>Category</th>
<th>Description</th>
<th>% per capita GDP growth due to 10% increase in digitization</th>
</tr>
</thead>
<tbody>
<tr>
<td>Constrained</td>
<td>problems with access and affordability</td>
<td>0.5</td>
</tr>
<tr>
<td>Emerging</td>
<td>access and affordability acceptable but below par capacity constraints</td>
<td>0.51</td>
</tr>
<tr>
<td>Transitional</td>
<td>access is ubiquitous, affordable and reliable but minor advances in speed, usability and skills indexes required</td>
<td>0.59</td>
</tr>
<tr>
<td>Advanced</td>
<td>Highest levels of access, affordability, utility and skills support</td>
<td>0.62</td>
</tr>
</tbody>
</table>

The average impact of broad band on GDP is higher when penetration is higher. The critical mass phenomenon provides increasing returns to broad band investments. Critical mass is achieved when half the population has a broad band connection (roughly 20% penetration).

South Africa has not yet reached critical mass. GDP growth as a result of increased broad band will be slower initially than suggested by World Bank developing country figures, BUT returns on investment will increase as greater penetration and access is achieved.
DOMESTIC ENVIRONMENT MATTERS

• Cross Country Analyses suggest impact of an increase in ICT and broad band usage creates consistent outcomes in terms of GDP growth and productivity gains. EU undertook seminal work to test this based on data which showed that the USA achieved greater productivity gains per unit of increased ICT usage than the EU.

• Three interesting findings relevant to South Africa (Van Reenan 2010):
  
  • High levels of labour and product market regulation are associated with lower productivity gains from increased ICT and broad band usage. Effects are most severe with respect to labour market regulation and offsets ICT productivity gains in the EU by -45%.

  • Unmeasured complementary assets and behaviours play a large role in the overall impact of increased ICT and broad band usage (up to 66% of total impact). Demonstrates that US firms get greater returns than EU firms for the same ICT investment. Similar trend seen in Japan (Fukao and Miyagawa 2007). Differences attributed to skills characteristics of the work force, human resource management policies, corporate management and organisational business models and labour market regulations.

  • Different types of ICT have distinctive effects on productivity and growth gains associated with increased usage. Shows that only certain uses of ICT create output productivity gains created largely by increased worker autonomy (Computer Aided Design and bespoke software). Most increased ICT and broad band increased usage results in higher profitability.
The above normal returns associated with increased ICT usage are neither universal nor automatic. Complementary organisational capital and market functioning impact the magnitude of productivity gains achieved through increased ICT and broad band usage. Further, increased ICT and broad band usage may well result in increased profitability through decreased costs and will not automatically lead to increased output or employment.

In South Africa uncompetitive market structures, skills constraints at management level and inflexible labour market regulations may make the benefits of increased ICT and broad band usage lower in the domestic economy than anticipated from reading international literature.
ICT AND BROAD BAND ADOPTION

• ICT usage has become ubiquitous leading scholars to suggest that enterprises no longer be categorised as ‘adopter’ and ‘non-adopters’ but rather as ‘early’ and ‘late’ adopters.
• Van Reenan, WEF, Koutroumpis all concur that when an enterprise adopts technology depends on how much at risk it is from not adopting such technology.
• Van Reenan finds that international trade and lower competitor prices are the main driver behind EU ICT adoption behaviour.
• Adoption levels are found to be higher when:
  • Production and services are delivered in a decentralised business model
  • Goods and services are sold abroad
  • Enterprises are foreign owned
  • Enterprises have higher numbers of in house ICT personnel
  • Enterprises have higher skilled workers
  • Enterprises utilise own account software (bespoke)
• Current ICT service providers in SA suggest that in past 3 years local firms are reducing ICT and networking capital spend and focusing on optimising existing infrastructure investments and reducing costs. Systems integration appears a current local priority (27% increase in revenue at Dimension Data), while product sales decline (7.5% decrease in revenue at Dimension data).

• 46% of Top 100 local firms have adopted some form of cloud computing. Of the remainder 6% intend to undertake some form of clouding by 2013, 4% by 2014 and 60% by 2015 (World Wide Worx 2012)

Increased ICT and broad band usage in South Africa may increase the competitiveness of SA goods and services, but leap frogging required as enterprises need to ‘catch up’ and then ‘retain’ competitiveness through continual upgrading and keeping pace with change. Most local companies do not exhibit the characteristics of high adopting enterprises.
ICT supports Innovation
- There is no statistically significant relationship between ICT usage and the number of patents registered. Most innovation advantages gained by increased ICT usage as a general purpose technology arise out of in house process innovation and improved resource management flows. Van Reenan (2010)

• Death of Distance Argument
- While the World Bank argues that increased broadband usage supports a death of distance argument whereby location becomes less important because of connectivity, Van Reenan and Katz (2010) show that while the death of distance argument may apply for individual enterprises its effect is ambiguous at an industrial level thereby reducing the regional disparity argument.
- They show that because the best infrastructure exists in urban areas, enterprises remain in areas of high economic agglomeration. This is found to be more true of the services sector than the manufacturing sector.

• Internet and the Web result in lower prices and lower price dispersion benefitting consumers
- Generally assumed that because consumers can compare prices online the range and standard deviation of the price of goods decreases (known as price dispersion). Found not to be true (Bailey 1998, Lee and Gosain 2008). In reality online dispersion is high even amongst single enterprises operating in different markets.
- Generally assumed that online prices will be lower than brick and mortar prices. Also not found to be true.
- Hypothesis is that firms consider the % of informed and uniformed clients and choose pricing strategy accordingly. Given that uniformed consumers continue to dominate price differentials and dispersions have not decreased significantly.
Most economic literature on ICT impacts on the economy focus on relationship between increased ICT and broad band usage and economic growth NOT employment. This makes sense as the demand for labour is derived demand which means firms only increase employment if sales increase.

As shown not all increases in ICT and broad band usage result in increased sales. Often the impact is increased productivity and decreased costs which manifest in higher levels of profit taking leaving output unchanged.

Even in literature which does suggest a direct relationship between increased ICT and broad band usage, the effects are relatively small:

- **World Bank** (2006): “firms that use ICT more intensively increased employment 1.2% more than firms who did not.”
- **World Economic Forum** (2012): “a 10% increase in digitization decreases unemployment by 0.84%”

On the other hand, numerous sources find that ICT does not have a statistically significant effect on employment growth at an industry level (Van Reenan 2010, Hagsten and Kotnik (2010)

Katz (2010) and Van Reenan (2010) show that the price of ICT capital is decreasing rapidly and that increased ICT usage results in decreased employment as capital is substituted for capital. In a French survey (2011) it was found that increased ICT usage was responsible for the loss of 500 000 jobs in France between 2000 and 2008.
**APPROACH**

- ICT Investments operate like any other capital investment – there is an initial economic impact due to the construction of the infrastructure; followed by spill over effects into other sectors.

- Spill over effects, or second round impacts, or network externalities arise because of the utility of the new infrastructure.

- Telecommunications infrastructural externalities are more complex than externalities associated with infrastructural investments in say roads, railways or electricity because of the heterogeneous character of telecommunications utility and the derived demand nature of demand for ICT and broad band.

- Capturing and enumerating spill over effects and job creation due to increased ICT and broad band usage is extremely complex due to not only this heterogeneity but also how to attribute increases in market share, sales, performance, productivity etc to ICT usage directly.

- Because the link between ICT and job creation occurs through increased growth in output/ sales a demand side approach is adopted, using various categories of demand to isolate output and employment effects.

- Once direct job creation has been calculated based on increased sales, multiplier effects are used to capture second (third) round impacts in the broader economy.
METHODOLOGY

Demand driven approach used, based on attempt to estimate potential revenue generated by enterprises due to the increased use of ICT (and broad band specifically) and to deduce job creation related to such increase in sales.

- International trend data used to determine effects of increased BB penetration, which then applied to local revenue and job creation data

- Assumptions:
  - no supply side constraints in terms of skills or infrastructure
  - increase in on-line spending and activity occurs in addition to in store purchases and that on line spending does not result in job losses in stores
  - productivity gains attributable to broad band usage translate into increased market share and sales due to increased competitiveness and not increased profit taking
  - local sectoral multipliers apply

- Direct and Indirect job creation calculated. Induced effects not calculated

- Assumptions:
  - price of broad band decreases by 50% by 2020
  - 100% broad band coverage by 2020
  - 10-20 mbps available for ICT enabled industries
  - 20-1 gbps available for ICT dependant ICT industry
## DEMAND CATEGORIES

### Four categories of demand
Each category has different characteristics, drivers and sales, output and employment effects:

<table>
<thead>
<tr>
<th>Category</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Private Consumption by Individuals</strong></td>
<td>including the total consumption of goods and services by consumers via the internet or needed to obtain internet access. This category includes: electronic equipment, e commerce, broadband subscriptions, mobile internet market, smart phone and hardware and software consumption.</td>
</tr>
<tr>
<td><strong>Private Investment</strong></td>
<td>private sector investment by enterprises in internet technologies and internet enabled services. This category includes: all purchases of telecoms, extranet, intranet, web sites, hardware and software. (report will differentiate between large and small firms, as well as analyze investment by industrial sector; the ICT sector is excluded from the analysis)</td>
</tr>
<tr>
<td><strong>Public Expenditure</strong></td>
<td>includes all expenditure (consumption and investment) by government including software, hardware, services and telecoms.</td>
</tr>
<tr>
<td><strong>Trade Balance</strong></td>
<td>this category includes all exports of internet and internet related services and equipment including business to consumer and business to business e commerce less all associated imports. (report will utilize this category to capture potential BPO and BPO Off shoring opportunities)</td>
</tr>
</tbody>
</table>

Source: McKinsey 2011
GLOBAL SOURCES OF DEMAND TRENDS

Shows that more than 50% of the GDP growth attributable to the internet arises from the behaviour and activities of individuals (private consumption).

This finding is surprising as most people believe that private investment by small and large businesses constitute the key drivers of ‘connected’ growth via B2B and B2C commerce.
Bar China and India where export activity dominates, in all other countries ICT’s contribution to GDP has been driven by private consumption either overtly by policy choices (South Korea), or, organically (US and UK.)

Countries with the highest internet contribution to GDP are also those countries with the highest levels of private consumption of the internet

Only in Brazil and Russia do high private consumption levels not correlate with higher internet contributions to GDP. This anomaly is explained by the critical mass argument where penetration remains low.

SA Private consumption

Broad band and internet usage data in South Africa is fragmented and highly diverse.

- 3.057 million PC internet subscribers (BMI-T 2010)
- 4.157 million internet users (World Bank 2011)
- 8.5 million internet users (World Wide Worx 2012)
- 4 million internet users (GSMA 2010)
- 4.188 million internet users (ICASA 2008)
- 60% of internet private consumption market accounted for by high end users, 40% mass market (GSMA 2010)

- Social networking is growing:
  - 1.1 million twitter users in SA in 2011 (Digital Marketing and Media Association 2011)
  - 10 million Mxit users in SA in 2011 (Digital Marketing and Media Association 2011)
  - 4.2 million Face book users in SA in 2011 (Digital Marketing and Media Association 2011)
  - 1.1 million Linked In users in SA 2011 (Digital Marketing and Media Association 2011)

- On Line Retailing is small but growing:
  - On line sales account for less than 1% of retail sales in SA compared to 4% in US, and 1.9% in China (ComScore Inc 2012)
  - SA on line sales worth R1.6 billion in 2010 (Business day 2010)
  - On line advertising increased 34% in 2010 (Digital Marketing and Media Association 2011)
Survey Findings from Digital Marketing and Media Association 2011:

- Typical South African internet user earns between R12 000 and R70 000 a month
- 64% of internet users are white, 24% black, 6% coloured, 5% Indian
- Usage increases with education: 35% of internet users have a university degree, while less than 3% of users have less than a matric
- 53% of internet users access internet from work, only 38% have access to internet at home
- 50% connect using ADSL, 20% mobile networks, 13% WiFi, 3.16% WAP mobile cell, 5% dial up
- Dominant use of the internet is: research and homework (49%), general surfing and browsing (49%), banking (31%), social networking (28%), news and weather (22%)
- Only 11% of users used internet for job searching and less than 1% reported using the internet to increase their skills or for knowledge transfer.
- 80% of online retail sales in South Africa accounted for by Top 8 online retailers: Pick n Pay, Woolworths, Kalahari, Net Florist, Cyber Cell, Streetcar, Mweb Shopping Zone, Digital mall
- Top items sold: groceries, clothing, books
International experience of private consumption accounting for more than 50% of GDP contribution of internet appears to be similar in SA, where 55.8% of revenue from telecoms is sourced from private individual consumption (BMI-T 2009)

- Majority of demand is in fact mobile voice in SA, but GSMA report (2010) believes that moving forward private consumption BB spend will increase faster than private investment spend by enterprises of all sizes.
  - Current expenditure by consumer on mobile BB services (2010) is R3b; forecasted to grow to R10b by 2015
  - Current expenditure by enterprises on mobile BB services (2010) is R4b; forecasted to grow to R8b by 2015.

- Higher private consumption growth rate driven by: falling prices of devices and connection fees and services, increased demand for apps and on line content, social networking (i.e. general internet demand variables)
Economic impact of increased private consumption due to increased broad band penetration (100%) and decreased price of broad band (assume 50% of current price by 2020) results in 3 impacts: purchase of new devices, increased purchase of bandwidth and eco system spend (spending on-line)

<table>
<thead>
<tr>
<th>ACTIVITY</th>
<th>DIRECT JOB CREATION</th>
<th>INDIRECT JOB CREATION</th>
<th>KEY ASSUMPTIONS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Purchase new devices</td>
<td>0</td>
<td>49 000</td>
<td>Assume all devices imported hence no direct job creation. Indirect job creation through increased retail activity, customer support and transportation of devices. GSMA (2010) estimate of device purchases of R10b (2010 to 2015) + R10b device purchases (2015-202) = R20b x communication equipment multiplier 3.17 (Tregenna 2006). Adjusted for customer support jobs shown in ICT sector jobs</td>
</tr>
<tr>
<td>Purchase Bandwidth</td>
<td>0</td>
<td></td>
<td>Included in ICT sector job estimates</td>
</tr>
<tr>
<td>Eco system spend</td>
<td>0</td>
<td>13 500</td>
<td>Direct jobs included in ICT sector. GSMA (2010) R5.1b eco system spend (2010-2015) + 125% growth for 2015-2020 = R6.63b = total eco system spend R11.73. Deducted spend from on line grocery retailers = R8.53. Deduct 50% purchases from international web sites</td>
</tr>
</tbody>
</table>

As seen in other global markets the key impact of increased private consumption of broad band is to be found in the retail sector both in terms of communications equipment and services purchases as well as general retailing activity and consumption of immaterialized goods (on line gaming, music, books).

Social science that makes a difference
75% of broadband and internet consumption is by tradition firms. 66% derives from the services sector, the remainder by manufacturers and other industries. Dominance of services sector due to high need for customisation as market differentiator (WB 2009)

Private enterprises demand broadband and internet to: decrease transaction costs, increase communication in-house and with clients, increase productivity, access new markets, streamline processes.

Productivity gains are most associated with improved networking and these gains are similar irrespective of the size of the firm or the age of the firm (EU 2010)

MNC’s and firms that are foreign owned or highly export orientated are the highest users of broadband and internet irrespective of size (WB 2009, EU 2010)

Source: World Bank, 2006
Private Investment Consumption (Large Firms)

International Usage of ICT by Sector

Source: World Bank, 2006
• South African profile of sector usage very similar to global trends.

• Largest consumers of ICT in SA are: transport, retail, hospitality, finance and business services

• 4 key verticals in SA pretty well saturated – it is a mature market with expected future growth of 6% over the next 10 years (BMI-T 2009)
PRIVATE INVESTMENT (LARGE FIRMS)

Continuum of IT using firms with different usage patterns and dependencies

- Top 350 large firms in SA account for 9.7% of total telecommunications spend in South Africa. The remainder of large firms (over 200 employees) account for 12.4% of telecoms spend.

- Large firm usage is dominated by fixed voice and VoIP (36%) and mobile usage (35%) with internet usage account for 11% of spend and other data services 18% of spend (BMI-T 2010).

- BMI-T (2010) forecast highest CAGR in other data services (10.7%) and internet (9.9%) 2009 to 2014.

- Top 350 Large corporations in SA are intensive users of IT systems and run world class operational processes equivalent to their international counterparts.

- Almost all large corporate in South Africa face IT and ICT skills shortage constraints and outsourcing of IT and ICT services dominates in house provision. 66% firm outsource at least 50% of ICT and IT functions. Managed growth of ICT services is growing between 11% and 20% per annum (IDC 2011, Dimension data 2012).
PRIVATE INVESTMENT (LARGE FIRMS)

SA % input costs of Telecoms 2011

Spend on SIC 75 (telecoms) is relatively low as a percentage input costs. Highest usage in services sector.

Source: Quantec 2012

SA % input costs of Telecoms 1991-2011

Spend on SIC 75 (telecoms) increased (1991-2001) when large investing heavily in setting ICT systems up. After initial surge spend has decreased partly due to less spending but also price decreases.

Source: Quantec 2012
<table>
<thead>
<tr>
<th>Sector</th>
<th>Direct Job Creation</th>
<th>Indirect Jobs</th>
<th>Assumptions</th>
</tr>
</thead>
<tbody>
<tr>
<td>Transport</td>
<td>4000</td>
<td>3400</td>
<td>R1.7b increase in SME sales BB enabled, assume 30% cost of sales is transport = R511m additional transport revenue x 6.7 transport multiplier (Tregenna 2006)</td>
</tr>
<tr>
<td>Retail/Wholesale</td>
<td>2000</td>
<td>0</td>
<td>Direct job creation based on 8 top retailers doubling on line sales due to increased BB usage. No multiplier effect since on line retail a substitute for in store purchases.</td>
</tr>
<tr>
<td>Hospitality</td>
<td>5000</td>
<td>1000</td>
<td>Assume 500 000 new tourists attracted to SA by 2020. Attribute 20% to broad band and increased web presence. 20 new tourists create 1 job in hospitality. Average spend x new tourists = R1200000 x 8.9 tourism multiplier (SA Tourism)</td>
</tr>
<tr>
<td>Financial and Business services (excluding BPO&amp;O)</td>
<td>2000</td>
<td>11700</td>
<td>Calculated additional R1.8b spend on internet banking, e services, tax, claims etc. Direct jobs low since in house reuse of existing staff. Indirect jobs calculated using financial and business services multiplier of 6.5 (Tregenna 2006)</td>
</tr>
<tr>
<td>Agriculture</td>
<td>1000</td>
<td>1200</td>
<td>GSMA R0.15b productivity gains 2010-2015. R0.19b forecast 2015-2020. Attribute 25% of gains to BB usage and increased sales =R0.34b new sales. Direct jobs calculated on current ratio's; indirect jobs calculated using 15.2 agricultural multiplier (Tregenna 2006)</td>
</tr>
</tbody>
</table>
SOME THOUGHTS ON FINDINGS

• 24 000 direct jobs created and 45 300 indirect jobs created by large verticals between 2012-2020 based on 100% broad band penetration and halving of price of broad band.

• **Figures are not very significant due to:**
  – Existing spare capacity in many of the verticals
  – Ability of firms to shift current employees into online activities without needing to employ additional workers (IT support jobs covered in IT Sector analysis)
  – Low increased sales projections (only 25% of productivity gains) based on the market structure of existing verticals and high levels of domestic concentration and market share, and low levels of international competitiveness.

• **Despite low figures, international literature suggests even these figures may be optimistic:**
  – Moodley and OECD findings (previous slide)
  – Productivity gains by increased usage of ICT decrease 45% in markets with high labour regulation (EU 2010)
  – Productivity gains by increased usage of ICT decrease 50% in markets with low levels of market competition (EU 2010)

• Seems DTI and NPC stance may be most relevant. ICT growth with respect to large private investment demand may be important for competitiveness, co-ordination and growth but not necessarily job creation.
SOME THOUGHTS ON FINDINGS

In the construction of this scenario the transport sector and retail sector benefit from increased broadband usage via consumer behavioral shifts towards online shopping, shopping opportunities for SME who gain market visibility and access via a web presence and the requirement for increased courier and delivery services.

In the hospitality industry increased sales of 20% of future anticipated tourists is attributed to increased web presence enabled through broad band expansion and ICT usage. Effect probably largest amongst smaller hospitality players who also tend to employ more staff per tourist than large hospitality players.

In manufacturing, mining and agriculture increased sales are attributable to increased productivity and hence competitiveness, as well as, improved market intelligence and price information, increased market share and accessing new markets based on ICT usage and web presence. Although GSMA research is bullish on productivity and market share gains in such firms, other more specific research on SA manufacturing firm usage (Moodley 2009) suggests that B2B commerce in manufacturing enhances relationships with existing trading partners but does little to help forge ongoing relationships with new firms. In addition Moodley finds that the majority of manufacturing firms web presence is static and has low functionality and interaction features.

OECD (2002) also found B2B manufacturing benefits in developing countries lower than in highly developed countries. Found firms use face to face negotiations for large input purchases and only use B2B for miscellaneous and non-essential commoditized input purchases.
Private Consumption (SME)

- NPC believes 90% of additional 11 million jobs needed in SA by 2030 will come from SME’s (NDP 2011).
- SME’s (less than 200 employees) accounted for 22% of telecom spend in SA in 2010 (BMI-T 2010).
- SME spend on internet and broad band estimated to grow at 9.3% per annum due to extended use of dongles and price decreases and largest market growth will be in firms employing between 11 and 50 workers (BMI-T 2010).
- SME data in SA very limited and likely many international case studies are irrelevant in SA context given the sectoral distribution of SME activity, the survivalist nature of many SME’s and the reality that SME employment growth in SA appears mainly due to new SME’s developing rather than existing SME’s increasing their labour force (TIPS 2001).
- World Bank Suggests, SME which use ICT perform better than those who do not use ICT in the following ways (World Bank 2006, 2009):
  - 3.4% higher sales
  - 1.2% higher employment creation
  - 4.3% higher exports
  - 48% higher value added per employee
PRIVATE INVESTMENT CONSUMPTION PERFORMANCE, SALES AND JOB CREATION

SME sector hard to quantify in SA due to informality and lack of data
  • Focused on firms employing 5-19 workers in all sectors, dominated by retail and personal services as well as small scale manufacturing (TIPS 2001)
  • Major benefit of increased ICT usage and specifically broadband in SME market is:
    • Increased market exposure and access
    • Improved customer relations and customization
    • Increased access to suppliers and opportunities to decrease input prices
  • International research shows that SME which are high users of ICT are 2/3 less likely to fail than those who do not use ICT (Van Reenen 2010)
  • International research shows that SME’s which use ICT enjoy sales 3.4% higher than non ICT using SME and employ 1.2% more workers. Profits are 5% higher and SME utilizing ICT re-invest 6% more than non ICT users (World Bank, 2009)

<table>
<thead>
<tr>
<th></th>
<th>Direct job creation</th>
<th>Indirect job creation</th>
<th>Assumptions</th>
</tr>
</thead>
<tbody>
<tr>
<td>SME’s</td>
<td>32 000</td>
<td>56 000</td>
<td>R40b additional sales (Dalberg report). Assume 50% of SME’s increase direct employment by at least 1 person. Multiplier effect of 1.4 to calculate indirect job creation</td>
</tr>
</tbody>
</table>

• A key reason why SME growth in SA is modest is due to lack of market space arising from large market share of a few dominant firms in the sectors where global SME’s tend to flourish e.g. 70% of SA grocery sales attributable to 5 large retailers (Lowitt, 2008)
Social science that makes a difference

• ICT allows government to offer electronic and mobile services increasing reach to citizens, improving efficiency of services, decreasing the cost of service provision and decreasing corruption and leakages

• EU Research (Van Reenan 2010) shows 4 key challenges which inhibit effective ICT usage in the public sector: organisational inflexibility, technical inflexibility due to full outsourcing, lack of in-house ICT skills, lack of competence in ICT supply market.

• No clear findings that increased ICT usage in public sector increases productivity or effective service delivery (e.g., UK schools programme, US police department program)

Globally government spending on ICT is the fastest growing sector between 2005 and 2009 (World Bank 2009)

NASSCOM (India) identifies servicing government as 80% of future market opportunity for India calling it the next big vertical

Source World Bank 2009
GOVERNMENT DEMAND

Four models which government’s use to deliver electronic and mobile services.

<table>
<thead>
<tr>
<th>Model</th>
<th>Countries</th>
<th>Benefits</th>
<th>Drawbacks</th>
</tr>
</thead>
<tbody>
<tr>
<td>Policy and investment coordination</td>
<td>Australia, Brazil, Canada, Chile, China, Finland, France, Ireland, Israel, Japan, Rwanda, Sri Lanka, United Kingdom, United States</td>
<td>Has direct control over funds required by other ministries to implement e-government. Helps integrate e-government with overall economic management.</td>
<td>May lack the focus and technical expertise needed to coordinate e-government and facilitate implementation.</td>
</tr>
<tr>
<td>Administrative coordination</td>
<td>Bulgaria, Arab Republic of Egypt, Germany, Republic of Korea, Mexico, Slovenia, South Africa</td>
<td>Facilitates integration of administrative simplification and reforms into e-government.</td>
<td>May lack the technical expertise required to coordinate e-government or the financial and economic knowledge to set priorities.</td>
</tr>
<tr>
<td>Technical coordination</td>
<td>Ghana, India, Jordan, Kenya, Pakistan, Romania, Singapore, Thailand, Vietnam</td>
<td>Ensures that technical staff is available; eases access to nongovernmental stakeholders (firms, NGOs, and academia).</td>
<td>May be too focused on technology or industry and disconnected from administrative reform.</td>
</tr>
<tr>
<td>Shared or no coordination</td>
<td>Russian Federation, Sweden, Tunisia</td>
<td>Least demanding and with little political sensitivity (does not challenge the existing institutional framework and responsibilities of ministries).</td>
<td>May lead to rivalries among ministries. No cross-cutting perspective. Fails to exploit shared services and infrastructure and economies of scale.</td>
</tr>
</tbody>
</table>

*Source: Hanna and Qiang 2009 (chapter 6 in this volume).*

- Requires institutional innovation on part of government and need to partner with private sector suppliers
- World Bank (2009) claims e-government in developing countries been constrained by high failure rates by early adopters
- Although GSMA are bullish about increased electronic and mobile service offerings by the SA government, little evidence in MTEF or line department annual reports to support such programming, bar small pilot projects usually undertaken at sub national level
  - Government investment on infrastructure side seen as a no regret investment and SA gov bullish
In 2010 SA government spent 10.25b on ICT, 3.93% of total government input costs (infrastructure and operational budgets)

- No large scale roll out of e services found in MTEF or line department Annual reports
- SAITS undertaking PIS and IMFS work showing bias towards integration of systems as present priority.
- GSMA suggest 87% CAGR between 2010 and 2015 by government on social services, specifically m health and m learning
- Included estimates for government spend to achieve ICT charter aim of 100% broad band coverage.

<table>
<thead>
<tr>
<th></th>
<th>Direct Job Creation</th>
<th>Indirect Job Creation</th>
<th>Assumptions</th>
</tr>
</thead>
<tbody>
<tr>
<td>Systems integration within</td>
<td>100</td>
<td>5200</td>
<td>R1b spend per annum until 2020 = R10b. 10% related to broad band. 50% imported content. For direct jobs used SATIS forecast. For indirect used trade and services multiplier of 10.74 (Tregenna 2006)</td>
</tr>
<tr>
<td>Government</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>E services by Government</td>
<td>0</td>
<td>0</td>
<td>Assume all services will be outsourced (shown in ICT sector). No indirect job creation as efficiency gains only.</td>
</tr>
<tr>
<td>Infrastructure Investment</td>
<td>1600</td>
<td>21000</td>
<td>Direct job creation figure from infrastructure paper. Indirect job creation based on R30b investment, 50% import content, 1.4 multiplier (Katz 2010)</td>
</tr>
</tbody>
</table>
SA ICT SECTOR

ICT sector has been dealt with independently as its growth is an outcome of the decisions of private consumption, private investment and government spending and behaviours.

- The SA ICT sector is relatively small: 2.8% GDP in 2008 (SIC 75 only); 6.8% GDP in 2008 (SIC 75 and professional services, software, manufacturing) (Comnins 2010)

- SA ICT sector contribution to GDP in 2012 estimated at 10% by World Wide Worx 2012

- 108 215 employees in 1985; shrunk to 63 503 in 2008 (Comninos 2010)

- Unit labour costs fallen 8% in last decade (wages have risen but employee numbers have decreased, especially less skilled employees) (Comninos 2010)

- Capital Labour ratio’s increased significantly:
  - 50 (1995); 100 (2000); 234 (2008) (Comninos 2010)

- South Africa has declined in the World economic Forum Network Readiness Index from 47th in 2007 to 52nd in 2009

- Broad Band penetration in South Africa fallen below countries with similar GDP levels: Argentina, Poland, Mexico, Turkey, Brazil (Comninos 2010)
Breitenbach (2003) survey of SA IT industry shows bias towards services rather than manufacture.

- Manufacture concentrated on: pre payment devices, set top boxes, telecoms. Software development in fraud prevention systems, electronic banking systems, pre payment systems and revenue management systems.
- Hard and software markets in South Africa highly dependant on imports.
- DPRU (2002) argues may not be bad as import substitution policy of Brazil has led to higher consumer prices of ICT hardware.

### South African Technical Balance of Payments (million US$)

<table>
<thead>
<tr>
<th></th>
<th>2000</th>
<th>2001</th>
<th>2002</th>
<th>2003</th>
<th>2004</th>
<th>2005</th>
<th>2006</th>
</tr>
</thead>
<tbody>
<tr>
<td>Payments</td>
<td>312</td>
<td>396</td>
<td>523</td>
<td>719</td>
<td>1040</td>
<td>1303</td>
<td>1704</td>
</tr>
<tr>
<td>Receipts</td>
<td>174</td>
<td>149</td>
<td>133</td>
<td>188</td>
<td>238</td>
<td>276</td>
<td>262</td>
</tr>
</tbody>
</table>

Includes: patents, licenses, trademarks, design and technical services

### South African High Tech Exports and Imports as a % of Total Manufacturing

<table>
<thead>
<tr>
<th></th>
<th>2005</th>
<th>2006</th>
<th>2007</th>
<th>2008</th>
</tr>
</thead>
<tbody>
<tr>
<td>Exports</td>
<td>6.5</td>
<td>6.6</td>
<td>6.3</td>
<td>5.8</td>
</tr>
<tr>
<td>Imports</td>
<td>27.3</td>
<td>25</td>
<td>21.9</td>
<td>21.9</td>
</tr>
</tbody>
</table>

Includes: handsets, ICT devices, hardware

Source: OECD 2009
**ICT SECTOR PERFORMANCE, SALES AND JOB CREATION**

<table>
<thead>
<tr>
<th>Maintenance of Broad Band Infrastructure</th>
<th>50</th>
<th>Infrastructure report</th>
</tr>
</thead>
<tbody>
<tr>
<td>Customer support for Broad Band Infrastructure</td>
<td>150-15000</td>
<td>Infrastructure Report</td>
</tr>
<tr>
<td>Eco system demand from Private Consumption</td>
<td>1000</td>
<td>R9b additional sales private consumption assume 20% ICT input cost. Assume 66% ICT outsourced = R 1b new revenue. Serviced by large and small ICT firms used SETA inferred job creation effects (2008)</td>
</tr>
<tr>
<td>E services from Government</td>
<td>6000</td>
<td>12.5% increase in revenue by ICT sector. Using existing ratio should create 8000 jobs but 20% spare capacity. Data capturing jobs</td>
</tr>
<tr>
<td>Demand from Private Investment</td>
<td>1000</td>
<td>R17.8b new sales, assume 10% ICT input cost. Assume 66% ICT outsourced = R1.2b new revenue. SETA figures</td>
</tr>
</tbody>
</table>

- Total of 19000 jobs created in ICT sector (assume 7000 customer support jobs for broadband infrastructure)
- 30% increase in the size of the SA ICT sector by 2020
Some thoughts....

• If ICT sector creates 19 000 jobs due to increased activity due to increased broadband penetration and use, and if total job creation (direct and indirect) outside of the ICT sector is 172 000 jobs; then for every 1 job created in the ICT sector 9 jobs are created in the broader economy.

• This figure is substantially higher than the much quoted figures of the Philippines (1 ICT job creates 3 other jobs) or India (1 ICT job creates 4 other jobs). This is to be expected since ICT jobs in these countries are based on off shoring and hence enjoy no (or limited) domestic multipliers.

• The SA calculations above are all based on domestic consumption expansion and increased sales and market share due to productivity gains in the local economy. Upstream and downstream linkages (captured by the multiplier effect) account for the larger ICT job creation activity.

• These calculations are optimistic and assume that largely productivity gains in the real sector translate into increased market share and not profit taking.

• The calculations also do not account for job losses due to relative prices shifts between capital and labour, or job losses in branches due to increased online sales.

• Even with these optimistic forecasts the approximately 200 000 jobs that could be created due to increased ICT penetration and usage falls well short of the 1m job goal established in the ICT Compact.
The only source of demand for increased ICT which, to date, offers massive job creation potential on a scale sufficient to meaningfully address the ICT 2011 Compact’s goal of 1 million jobs is TRADE DEMAND

• This source of demand relates to the provision of IT Enabled Services (ITES) sold to foreign companies i.e. The export of ITES, commonly referred to as business process outsourcing (BPO) or Business Process outsourcing and Off shoring (BPO&O).
• Outsourcing is an information intensive service function transferred outside an enterprise to a 3rd party provider; off shoring occurs when the shift is beyond the border of the enterprise’s own country.
• BPO&O accounts for the majority of high employment figures associated with the ICT sector in countries such as the Philippines and India
• 80% of the current outsourcing market originates from the UK and USA due to high domestic labour costs (Altman 2011)
• India and the Philippines are the largest global suppliers of BPO&O, followed by Canada and Ireland, with new comers including: China, Central Europe, Mexico, South America, Egypt, Kenya, Mauritius and South Africa
• Everest (2008) value the current BPO&O market at US$ 10b but believe the addressable opportunity is US$250b
Trade Demand

BPO&O disaggregated into 3 main categories:

- Business process Outsourcing – relatively low skills requirements
- Information technology Outsourcing – low to high skills requirements
- Knowledge Process Outsourcing – highest skills requirements

- BPO, ITO and KPO all include horizontal activities (generic activities applicable to all sectors e.g. Payroll services, accounting services) as well as services for verticals (industry specific activities such as EDI tracking for the transpiration and logistics industry)

- Sectors with the highest demand for off shoring are: banking, financial services, telecoms, energy, travel, transport, health and retail (Altman 2011)

- Locational demand choices are a function of: (1) cost of labour, set up costs and infrastructure; (2) availability of skills; (3) quality of infrastructure; (4) risk profile and (5) attractiveness of market in terms of access to nearby markets. (Altman 2011)

- As countries move up the BPO value chain (offering higher value services which are less generic) price differentials as locational determinants become less important. In high value BPO activities: (1) quality, (2) risk management and (3) risk diversification become the most important determinants. e.g.: In asset management BPO

- Higher level value chain BPO activities create fewer direct jobs but draw along and crowd in support services which are more labour intensive. This allows for progressive expansion and overall higher levels of job creation.
SA and BPO&O

BPO alluring to SA because:

- Market demand will continue to grow, high diversity of activity, low barriers to entry, creates knowledge transfer, high employment of women, potential exponential job creation opportunities

- SA quite competitive for generic back and front office BPO: 50% cheaper than US and UK; 10% cheaper than Eastern Europe, 12% more expensive than India and Philippines (Everest 2008)
  - Real estate costs in SA 30% lower than in Bangalore and 50% cheaper than in Manila
  - SA megabit per second costs are US$17 500 compared to US$ 12500 in the Philippines and US $ 8000 in India (Everest 2008)
  - SA however cannot compete with respect to generic skills. Sa produce 90 000 university graduates a year, compared to 3million a year in India, 480 000 a year in Philippines and 300 000 in Egypt (Everest 2008)

- SA has specific competitive advantages in financial sector, engineering sector, construction sector (all higher value activities which are more skills intensive)
  - In all these sectors SA has firms with good international reputations, overseas operations, MNC associations; comply with international accreditation and best practices, and have substantial skills competencies.
  - For example: Sa Banking industry rated as 9th most sophisticated in the world, SA Banks compliant with BASEL II, FSA 70, all ISO standards and Six Sigman. SA has greater stock of CFA’s, actuaries and CA’s than say Philippines
# CURRENT MARKET AND SA SHARE

## Current SA BPO&O Activity 2008

<table>
<thead>
<tr>
<th>Outsourcing sub sector</th>
<th>Global market potential US$ billion</th>
<th>CARG 1997-2012</th>
<th>SA market share US$ million</th>
<th>Direct jobs</th>
</tr>
</thead>
<tbody>
<tr>
<td>Information Technology Outsourcing</td>
<td>132</td>
<td>9</td>
<td>109</td>
<td>3630</td>
</tr>
<tr>
<td>Knowledge Process Outsourcing</td>
<td>6.6</td>
<td>23</td>
<td>40</td>
<td>1320</td>
</tr>
<tr>
<td>Human Resource Outsourcing</td>
<td>8.8</td>
<td>28</td>
<td>30</td>
<td>900</td>
</tr>
<tr>
<td>Financial Accounting Outsourcing</td>
<td>13.2</td>
<td>14</td>
<td>69</td>
<td>2310</td>
</tr>
<tr>
<td>Call Centers</td>
<td>24.3</td>
<td>9</td>
<td>620</td>
<td>24156</td>
</tr>
<tr>
<td>Others (animation, creative)</td>
<td>3.3</td>
<td>11</td>
<td>18</td>
<td>594</td>
</tr>
</tbody>
</table>


- Currently SA’s BPO sector accounts for less than 0.5% of global BPO&O
- 90% of SA BPO sector is call centre activity.
- 86.5% is captive clients only 13.5% outsourced
- 70% of BPO off shoring originates from the UK
- At present just 5280 employees in SA servicing offshore clients in BPO.

Source: Altman 2011
POLICY

• PRESENT APPROACH
  • At present SA government focused on call centre activity due to its high demand for low skilled labour and its labour intensity
  • Most call centre activity is captive not third party as local firms have had poor experiences with outsourcing
  • Focus is on generic services
  • Government has not develop sufficient specialized institutional depth to meaningfully support BPO sector although it has now established BPeSA
  • 2011 incentive package introduced which should decrease BPO costs by 20% (Altman 2011)

• FUTURE DIRECTION
  • Suggested that SA focus on niche BPO&O service offerings
  • Offer both vertical and horizontal services
  • Accept lead activities will have lower labour intensity and higher skills demands, but that such activities will draw along more generic services with increased labour intensity and lower skills requirements
  • Become more aggressive is developing the sector
  • Improve ability of foreign nations to work in SA
The following sectors were chosen as potential niche markets in which SA could attain market share with the appropriate policy support.

Each sector corresponds to a growing or new market opportunity as defined by Frost and Sullivan (2009).

Each sector has lead SA firms with international connections or reputations sufficient to meet reputational requirements needed to attract offshore business.

Each sector has some element of competitive advantage.
# Offshoring Potential Markets and Job Creation

<table>
<thead>
<tr>
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</thead>
<tbody>
<tr>
<td>FAO</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>US$ market capture</td>
<td>104</td>
<td>155</td>
<td>233</td>
<td>349</td>
<td>523</td>
<td>923</td>
</tr>
<tr>
<td>Direct job creation</td>
<td>3400</td>
<td>4600</td>
<td>7000</td>
<td>10500</td>
<td>15000</td>
<td>27000</td>
</tr>
<tr>
<td>Indirect job creation</td>
<td>5000</td>
<td>7000</td>
<td>10500</td>
<td>16000</td>
<td>24000</td>
<td>42000</td>
</tr>
<tr>
<td>Total</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>69000</td>
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<tbody>
<tr>
<td>KPO</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>US$ market capture</td>
<td>60</td>
<td>90</td>
<td>135</td>
<td>202</td>
<td>304</td>
<td>600</td>
</tr>
<tr>
<td>Direct job creation</td>
<td>1800</td>
<td>2700</td>
<td>4050</td>
<td>6075</td>
<td>9112</td>
<td>18000</td>
</tr>
<tr>
<td>Indirect job creation</td>
<td>2700</td>
<td>4050</td>
<td>6075</td>
<td>9000</td>
<td>14000</td>
<td>27000</td>
</tr>
<tr>
<td>Total</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>45000</td>
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</thead>
<tbody>
<tr>
<td>Other</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>US$ market capture</td>
<td>27</td>
<td>41</td>
<td>61</td>
<td>91</td>
<td>137</td>
<td>437</td>
</tr>
<tr>
<td>Direct job creation</td>
<td>900</td>
<td>1200</td>
<td>1800</td>
<td>2700</td>
<td>4100</td>
<td>13000</td>
</tr>
<tr>
<td>Indirect job creation</td>
<td>1300</td>
<td>1800</td>
<td>2700</td>
<td>4100</td>
<td>610</td>
<td>20000</td>
</tr>
<tr>
<td>Total</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>33000</td>
</tr>
</tbody>
</table>

**Assumptions:**
- From 2015 market share increases by 50% per annum for 5 years
- In year 6 a US$300m contract is achieved (a 10 year, US$300m contract is viewed as a ‘success’ contract
- Direct job creation based on Sullivan and Frost (2009) 33 jobs per US$1million (based on SA experience to date)
- Indirect job creation based on multiplier of 1.5
- Indirect multiplier less than Indian or Philippines multipliers as these multipliers included induced expenditure by workers (especially construction of new homes in India)
EXPONENTIAL GROWTH

- BPO&O offers greatest opportunity for exponential growth
- Assume in 2021, South Africa could win a second US $300m contract in each category it would create an additional 290 000 jobs

<table>
<thead>
<tr>
<th></th>
<th>Direct Job creation</th>
<th>Indirect Job Creation</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>FAO</td>
<td>33000</td>
<td>49000</td>
<td>82000</td>
</tr>
<tr>
<td>KPO</td>
<td>33000</td>
<td>49000</td>
<td>82000</td>
</tr>
<tr>
<td>Other</td>
<td>36000</td>
<td>54000</td>
<td>126000</td>
</tr>
</tbody>
</table>
### JOB CREATION SUMMARY

<table>
<thead>
<tr>
<th>Demand Source</th>
<th>Direct Job Creation</th>
<th>Indirect Job Creation</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Private Consumption</td>
<td>0</td>
<td>62 500</td>
<td>62 500</td>
</tr>
<tr>
<td>Private Investment (Large)</td>
<td>24 000</td>
<td>45 300</td>
<td>69 300</td>
</tr>
<tr>
<td>Private Investment (SME)</td>
<td>32 000</td>
<td>56 000</td>
<td>88 000</td>
</tr>
<tr>
<td>Government</td>
<td>1 600</td>
<td>26 000</td>
<td>27 600</td>
</tr>
<tr>
<td>ICT Sector</td>
<td>19 000</td>
<td>0</td>
<td>19 000</td>
</tr>
<tr>
<td>Trade Sector (BPO&amp;O)</td>
<td>58 000</td>
<td>89 000</td>
<td>147 000</td>
</tr>
<tr>
<td><strong>TOTAL</strong></td>
<td><strong>134 600</strong></td>
<td><strong>278 800</strong></td>
<td><strong>413 400</strong></td>
</tr>
</tbody>
</table>

- The above summary leaves the impact of 100% broadband coverage anticipated in the ICT compact well short of the 1 million job goal.
- Even by increasing the size of the ICT sector by 30% only 413 400 jobs are anticipated to be created by 2020 of which only 134 600 are direct jobs.
- This emphasizes the point by the NPC that what is good for growth is not necessarily good for employment.
- HOWEVER the above figures are based on an extremely short time horizon – a mere 8 years, if the time horizon was expanded to 2030 exponential effects would be anticipated.
- The greatest single source of job creation enabled by improved broadband coverage and improved pricing will be the ITES Trade sector which has the potential to contribute 700 000 jobs by 2030 if adequately supported.
- In the domestic market private consumption and the SME market will be major drivers of job creation.
STRATEGY

• Unlikely that 1 million job goal by 2020 will be reached - but it is attainable by 2030.
• BPO&O offers the greatest opportunity for exponential job creation facilitated by increased broad band coverage, penetration and usage
• National government and industry need to work together to develop niche BPO&O markets servicing offshore clients leveraging existing lead firm reputations, MNC’s operating in SA and areas of skills based competitive advantage. Importantly the general education system is insufficient to provide required skills for BPO sector. Need specialized institutions as found in India and Philippines.
• In the domestic market increased broad band consumption by private individuals will be crucial in unlocking job creating second round effects in the broader economy and especially in SME market.
• Increased ICT usage in the manufacturing sector has the potential to create substantial positive employment effects both directly and indirectly. Uptake is limited by management experience and in house skills hence capabilities development programming could release demand.
• Research shows that productivity gains are highest for networking investments, followed by bespoke software applications and lastly off the shelf packaged software. As such the mid market and SME’s should be supported to invest in networking, running active (not static) web sites and investing in bespoke software
• **ENTERPRISE OBSERVATIONS AND RESEARCH**

- At the end of the day the decision for an individual, enterprise or institution to invest in increased ICT and broad band usage is a derived demand decision: i.e. they demand these services because they offer some benefit which outweigh the cost.

- Case studies and surveys conducted in South Africa covering consumers, SME’s and large companies show in aggregate that increased ICT and broad band usage for most involve high issues of:
  - **Cost Effectiveness** (WIZZIT Survey showed 87% of respondents would consider internet banking if access pricing was lower, 92% SME’s in ITNet Africa Survey 2007 responded that they did not have email or web sites because of costs)
  - **Reliability and Trust** (Moodley 2009, OECD 2002 found firms reticent to move to increased ICT and broad band usage because of quality of services and downtime, issues of data protection, authentication and security concerns, increased vulnerability)
  - **A lack of capabilities** (management capabilities and staff capabilities, requirement to outsource, bad experiences with out sourcing, concerns about in house staff transitions, skills development and capabilities)
  - Suggests that consumer education at all levels is an important requirement, especially in accessing the mass market.
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