Counting the Net: Internet Access Indicators

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The views expressed are those of the author and may not represent those of the ITU or its Members.
Topics

- Reason
- Indicators – The 3 ‘P’s
  - Physical
  - People
  - Policy
- Conclusions
- Sources & Samples
Reason

• Internet indicators essential for quantifying “The State of the Internet” & the “Digital Divide”

• A variety of statistics are used to measure Internet access

• Data often not comparable, poor choice of indicators, statistics not available for many developing countries

“...analysts largely ignore the developing world, and the paucity of information available about the developing countries' use of technology guarantees that they will remain on the global scrap heap.”—NUA
Physical indicators

- Need infrastructure for accessing the Internet
  - Host computers
  - Telephone lines
  - Personal computers

Percent of population, 1999

- $R^2 = 0.67$
- Internet Users vs. Hosts (12%)

- $R^2 = 0.65$
- Internet Users vs. Telephones (70%)

- $R^2 = 0.74$
- Internet Users vs. PCs (50%)

Source: www.itu.int/ti
Hosts

• Host computers most commonly (ab)used indicator of Internet penetration
• What are we trying to measure?
• Where is that dot.com?

Internet domain names
Top 5 countries
As % of population, 7-99

<table>
<thead>
<tr>
<th>Country</th>
<th>Domain</th>
<th>% of Population</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sweden</td>
<td>.se</td>
<td>6%</td>
</tr>
<tr>
<td>Norway</td>
<td>.no</td>
<td>8%</td>
</tr>
<tr>
<td>Iceland</td>
<td>.is</td>
<td>9%</td>
</tr>
<tr>
<td>Finland</td>
<td>.fi</td>
<td>11%</td>
</tr>
<tr>
<td>Niue</td>
<td>.nu</td>
<td>337%</td>
</tr>
</tbody>
</table>

Source: ITU adapted from www.isc.org
Telephones

- Dial-up still most common Internet access method
- Broadband Lines (ISDN, leased, DSL)
- Other connection indicators
  - Cable TV subscribers
  - Mobile phone subscribers

US Internet subscribers
By access method, Q1’00

Source: TR’s Online Census
www.cch.com
• PC most common method of accessing the Internet
• Breakdown between business and household useful
• Difficult to obtain for developing countries
• Often proprietary data

Homes with a PC, 1999, %

<table>
<thead>
<tr>
<th>Country</th>
<th>% of Homes with Internet</th>
</tr>
</thead>
<tbody>
<tr>
<td>Israel</td>
<td>44%</td>
</tr>
<tr>
<td>Cyprus</td>
<td>31%</td>
</tr>
<tr>
<td>Lebanon</td>
<td>4%</td>
</tr>
<tr>
<td>Egypt</td>
<td>3%</td>
</tr>
<tr>
<td>Tunisia</td>
<td>0.4%</td>
</tr>
</tbody>
</table>

Source: ITU adapted from www.ispo.cec.be/esis
Cellphone meets the PC

Cellular evolution

• 1G: Analog
• 2G: Digital
  – SMS
• 2.5G:
  – WAP, GPRS
  – i-mode
• 3G:
  – IMT-2000, UMTS, W-CDMA

Handset as terminal or modem?

i-mode subscribers 000s

Source: NTT DoCoMo.

Forecast March 2001: 13'740

February 1999: 0
March 1999: 220
August 1999: 1'000
March 2000: 5'000
9 July 2000: 8'732

9 July 2000
People indicators

Population
Aware
Covered
Use
Subscribe

Source: www.thestandard.com

U.S. Online Population Universe

- Total U.S. adults: 199
- Total U.S. adults with online access: 113
- Used Internet* in last 30 days: 86
- From more than one location: 19
- From work only: 21
- From home only: 46

*24% of total adults used Internet in the last 30 days.
Awareness

- Awareness of Internet far from universal!
- Some people just do not want to use it

“Can’t surf, won’t surf - 15 million say ‘No’ to Internet” — Which?Online

Singapore: Level of Internet Awareness

- All adults aged 18-55
  - 2.09m

- All who are aware of Internet
  - 1.93m
  - 92%

- All who ever used Internet
  - 677,000
  - 32%

- All who ever bought via Internet
  - 40,000
  - 2%

South African households

- **No access** 18%
- **Have telephone** 29%
- **Use public phone** 36%
- **Use neighbours** 6%
- **Use another phone** 11%

- To be covered by Internet (access) is not same as using it!
- Where is Internet used from?
- Households with a telephone example
- Towns with Internet
- Schools with Internet
- Cybercafes and other public access points
- Distance from Internet
- Time from Internet

Source: Statistics South Africa. 1997 Census in Brief.
Users

- Basic and comprehensible measure of Internet access
- No standard definition of
  - user population,
  - frequency or
  - type of usage
- Many collecting
  - NUA
  - Nielsen
  - Statistical offices

poor but improving coverage of developing countries

US Online Users
Dec.99-May.00, millions

Source: ITU adapted from www.thestandard.com
Subscribers

- Most measurable access indicator
- Available from **ISP associations**, government sources, **ISPs**
- Paid versus free access
- Not always close relationship between subscribers and users
- **Dis-aggregate**

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*Graph: Dial-up Internet subscribers (Singapore, 000s)*

- **Source:** IDA.
Policy indicators

- Statistics that have an impact on the development of the Internet
  - ISP market
  - Pricing
  - Usage

Closing the Digital Divide

digitaldivide.gov
ISP market

- Qualitative rather than quantitative is more relevant.
- Competition?
- Operational versus licensed?
- Price of license?
- Allowed own infrastructure?
- Peering?

Number of ISPs in CEE End 1999

Source: ESIS.
Pricing

• Affordability major barrier to Internet use
• Internet tariff comparisons complex
• ISP charge
• Telephone usage
• Different access (telephone, ISDN, DSL, cable modem, satellite, leased line)

Internet Access Prices
US$, 30 hours, 2000

Source: OECD.
Usage

• From a policy perspective, useful to know how long users are spending on the Internet

• Low usage might reflect affordability or lack of sophistication

• Methodology

Hours spent surfing March 2000

<table>
<thead>
<tr>
<th>Country</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ireland</td>
<td>4:23</td>
</tr>
<tr>
<td>UK</td>
<td>5:17</td>
</tr>
<tr>
<td>Singapore</td>
<td>6:18</td>
</tr>
<tr>
<td>N.Zealand</td>
<td>7:57</td>
</tr>
<tr>
<td>USA</td>
<td>9:42</td>
</tr>
</tbody>
</table>

“Having to pay for local phone charges discourages heavy usage”—Nielsen

Source: Nielsen//NetRatings.
Conclusions

• Usage of standard set of indicators
• Governments need to coordinate of collection, compilation and dissemination of Internet indicators
  – One-stop ‘shopping’
• International assistance for developing countries
## Putting it all together for Singapore

<table>
<thead>
<tr>
<th>Category</th>
<th>Indicator</th>
<th>Value</th>
<th>Date</th>
<th>*</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Infrastructure</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Hosts</td>
<td>148’249</td>
<td>01/99</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>Telephones</td>
<td>1.9 m</td>
<td>04/00</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td>PCs (home)</td>
<td>47%</td>
<td>12/98</td>
<td>3</td>
</tr>
<tr>
<td><strong>Access</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Population</td>
<td>3.2m</td>
<td>06/99</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>Awareness</td>
<td>92%</td>
<td>1988</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td>Coverage</td>
<td>99%</td>
<td>School+Work+Home</td>
<td>6</td>
</tr>
<tr>
<td></td>
<td>Users</td>
<td>0.4/1.7m</td>
<td>03/00</td>
<td>4</td>
</tr>
<tr>
<td></td>
<td>Subscribers</td>
<td>1.7 m</td>
<td>04/00</td>
<td>2</td>
</tr>
<tr>
<td><strong>Policy</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>ISPs</td>
<td>18</td>
<td>06/00</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td>Price 1 hour</td>
<td>US$0.50</td>
<td>07/00</td>
<td>5</td>
</tr>
<tr>
<td></td>
<td>Usage</td>
<td>6:18</td>
<td>03/00</td>
<td>4</td>
</tr>
</tbody>
</table>

One-stop shopping

- Ability to obtain all relevant data from one location
- International assistance

“...fund the extension of the European Survey on the Information Society to CEECs and, in particular, to identify and analyse regional disparities in terms of basic telecommunications services, information infrastructures and applications.” —EU

Source:
www.ispo.cec.be/esis/default.htm
Sources, Samples & Ideas

- Advertising
- Public access
- ‘Soft’ indicators
- Analytical
- Quality of service
- Profiles
- e-commerce
<table>
<thead>
<tr>
<th>Internet Universe</th>
<th>All members (2+) of households which currently have access to the Internet</th>
<th>712,741</th>
</tr>
</thead>
<tbody>
<tr>
<td>Active Internet Universe</td>
<td>All members of the universe who actually use the Internet during the period</td>
<td>319,121</td>
</tr>
<tr>
<td>Unique Sites Visited</td>
<td>A unique URL (e.g. <a href="http://www.acnielsen.com">www.acnielsen.com</a>)</td>
<td>17</td>
</tr>
<tr>
<td>Page Views</td>
<td>The total number of times a web page has been fully loaded on the user's browser</td>
<td>358 (month)</td>
</tr>
</tbody>
</table>

Source: Nielsen//NetRatings.
# Public access

<table>
<thead>
<tr>
<th>Turkey</th>
<th>Total</th>
<th># Online</th>
<th>% Online</th>
</tr>
</thead>
<tbody>
<tr>
<td>Primary &amp; secondary schools</td>
<td>62'000</td>
<td>190</td>
<td>0.3</td>
</tr>
<tr>
<td>High schools &amp; universities</td>
<td>80</td>
<td>66</td>
<td>82.5</td>
</tr>
<tr>
<td>National ministries</td>
<td>18</td>
<td>15</td>
<td>83.3</td>
</tr>
<tr>
<td>Regional &amp; local authorities</td>
<td>4'179</td>
<td>82</td>
<td>2.0</td>
</tr>
<tr>
<td>Hospitals &amp; clinics</td>
<td>1’098</td>
<td>56</td>
<td>5.1</td>
</tr>
<tr>
<td>Museums</td>
<td>283</td>
<td>29</td>
<td>10.3</td>
</tr>
<tr>
<td>Libraries</td>
<td>811</td>
<td>48</td>
<td>5.9</td>
</tr>
</tbody>
</table>

Source: ESIS.
<table>
<thead>
<tr>
<th>Indicator</th>
<th>Resources</th>
</tr>
</thead>
<tbody>
<tr>
<td>Government</td>
<td><a href="http://www.freedomhouse.org">www.freedomhouse.org</a></td>
</tr>
<tr>
<td></td>
<td><a href="http://www.gksoft.com/govt">www.gksoft.com/govt</a></td>
</tr>
<tr>
<td>Income</td>
<td>UNDP Human Development Report</td>
</tr>
<tr>
<td></td>
<td><a href="http://www.undp.org/hdro">www.undp.org/hdro</a></td>
</tr>
<tr>
<td>Literacy</td>
<td></td>
</tr>
<tr>
<td>Education</td>
<td></td>
</tr>
<tr>
<td>Language</td>
<td><a href="http://www.glreach.com/globstats/index.php3">www.glreach.com/globstats/index.php3</a></td>
</tr>
<tr>
<td>-Users</td>
<td><a href="http://www.sil.org/ethnologue">www.sil.org/ethnologue</a></td>
</tr>
<tr>
<td>-Content</td>
<td><a href="http://www.isoc.org:8080/palmares.en.html">www.isoc.org:8080/palmares.en.html</a></td>
</tr>
</tbody>
</table>

“...45 countries now restrict Internet access...”
—Freedom House
Analysis

State of the Internet in Uganda

Pervasiveness

Sophistication

Organizational

Connectivity

Dispersion

Absorption

0 = (non-existent) to 4 (highly developed)

Source: ITU (framework from Mosaic Group mosaic.unomaha.edu/gdi.html)
Quality of Service

- Dial-up system availability (able to connect 95% of the time)
- Service activation time (less than 3 working days)
- Number of complaints per 1’000 subscribers

**Dial-up Access Availability, Singapore**

<table>
<thead>
<tr>
<th>Month (2000)</th>
<th>SingNet</th>
<th>Pacific-Net</th>
<th>StarHub</th>
</tr>
</thead>
<tbody>
<tr>
<td>Jan</td>
<td>100%</td>
<td>100%</td>
<td>100%</td>
</tr>
<tr>
<td>Feb</td>
<td>100%</td>
<td>100%</td>
<td>100%</td>
</tr>
<tr>
<td>Mar</td>
<td>100%</td>
<td>100%</td>
<td>100%</td>
</tr>
</tbody>
</table>

*Source: IDA.*
Profiles

- Breakdown of users useful for understanding who has access and who does not

“... there is a growing digital divide between those who have access to the Internet and those who don't, and that the divide exists along the lines of education, income, region and race.”—Bill Clinton

Source: ITU adapted from Australian Bureau of Statistics.
e-commerce

• Consultants love it!

• Your guess is as good as mine

• What is it?
  – B2B vs. B2C

• Developing methodology
  – See www.singstat.gov.sg/EC/echome.html

• Business use of web

Source: www.thestandard.com
The ITU's Telecommunication Indicator Reports present an analysis of trends and developments in the global telecommunications sector, backed by official statistics from the world's leading source of telecommunication information. These reports and databases are available online.

See also the publication:
**Trends in Telecommunication Reform, 1999**

**African Internet Meeting**

**World Telecommunication Indicators Meetings**
- Final reports

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