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ESCWA Expert Group Meeting on The Role of ICT in Socio-Economic Development
Beirut, ESCWA
9-10 April 2013

Software is Everywhere

“The growing emphasis on ICTs in the delivery of government, healthcare, education and other goods and services demands customized applications. Countries therefore need the capacity to adopt, adapt and develop relevant software.”
BAN Ki-moon, UN Secretary-General
Software Sector Opportunities

- Low capital barriers to entry
- Generator of employment – not least for the skilled youth
- Source of innovation
- Source of export revenue
- Key to sustain productive ICT use in society

Developing Countries Spend Little on Software

<table>
<thead>
<tr>
<th>Country</th>
<th>ICT Spending</th>
<th>ICT Spending</th>
<th>ICT Spending</th>
</tr>
</thead>
<tbody>
<tr>
<td>Egypt</td>
<td>5.3%</td>
<td>8.7%</td>
<td>14.0%</td>
</tr>
<tr>
<td>Tunisia</td>
<td>10.5%</td>
<td>12.0%</td>
<td>18.5%</td>
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<tr>
<td>Jordan</td>
<td>6.2%</td>
<td>9.3%</td>
<td>14.8%</td>
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<tr>
<td>UAE</td>
<td>12.3%</td>
<td>16.5%</td>
<td>22.8%</td>
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<tr>
<td>Kuwait</td>
<td>12.3%</td>
<td>15.6%</td>
<td>21.9%</td>
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<tr>
<td>Morocco</td>
<td>3.4%</td>
<td>5.5%</td>
<td>10.7%</td>
</tr>
<tr>
<td>Saudi Arabia</td>
<td>11.5%</td>
<td>14.7%</td>
<td>20.9%</td>
</tr>
</tbody>
</table>

Source: WITSA/IHS Global Insight Inc.
India tops software exports from the South
Followed by China, Philippines and Singapore

Top 20 exporters of computer and information services, 2010 or latest year

Egypt: $171 m
Morocco: $297 m
Tunisia: $41 m

Market Orientation Differs

ESCWA examples:
Export-oriented:
- Morocco
- India
Domestic sale-oriented:
- Egypt
- Tunisia

Sources: UNCTAD, adapted from WITS/HS Global Insight Inc. and WTO statistics database (see annex table 4.5).
Notes: The ratio of exports to computer software and services spending and computer software and services as a percentage of GDP has been capped at 1 to enhance readability of the figure.
Local Demand for Software is Expanding

**Mobile applications**

- Expanding use of mobile phones – more demand for mobile “apps”
- Global mobile app industry in 2011: $15-20 billion, set to rise to $38 billion by 2014
- Mobile apps development adapted to local needs, cultures and languages on the rise in developing countries
- Diverse content: from news and entertainment to patient care and government services apps


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Strong Appetite for Smartphones

Growing Demand for Software

*Social media, online work and cloud computing*

- **Broadband** enables new forms of software development
- **Use of social media** creates demand for new applications
  - End 2011: 481 million Facebook users; ~75% outside of North America
  - Mobile version widely used in developing countries
- **Online software freelancing** rising fast
  - Elance: programmers from 150 (!) countries involved
  - Bangladesh: some 10,000 freelance programmers
- **Cloud computing** and Software as a Service (SaaS)
  - Brazil and China among fastest adopters of cloud computing

Source: UNCTAD, Facebook, Elance.com, Capgemini, Forrester, media reports.

Free and Open Source Software Coming of Age

- **FOSS** continue to gain market share in many market segments
- **FOSS** offers several advantages to users
  - Promotion of local learning
  - Lower costs and more local value creation
  - Less dependence on proprietary software
  - National security considerations
  - Opportunities for local business development
- **ICT growth areas** rely on FOSS
- **Policies** becoming more FOSS friendly
  - Among developing regions, Asia is the front-runner
  - 7 policy initiatives noted in Middle East 2000-09

Source: UNCTAD, Center for Strategic and International Studies, NetCraft, StatCounter.
Software Strategies Spreading

- Software strategies put in place in many countries, e.g.,
  - Bangladesh – rapid growth of freelancing
  - China – software production rose from $9 billion to $286 billion in the last decade supported by government policies
  - India – increasing focus on domestic software needs
  - Malaysia – strong emphasis on FOSS
  - Republic of Korea – Software Korea Quantum Jump Strategy
  - Sri Lanka – mainly export oriented

- Strategies need to be adapted to each case
- Involve private sector, university and developer community

Barriers to Software Growth

According to national IT/software associations

- Limited access to venture capital
- Lack of qualified human resources
- Lack of government procurement
- Limited capabilities in domestic SW firms
- Weak demand from private sector
- High rates of software piracy
- Inadequate protection of IPRs
- Limited demand from export markets
- Unfavourable general business climate

Source: UNCTAD and WITSA
Venture Capital Rising but Concentrated

Some ESCWA economies among recipients

Areas for Policy Intervention

- Affordable ICT infrastructure – especially broadband
- Availability of skilled workforce
  - Case of Software Engineering Competence Center in Egypt
- Public procurement as strategic tool to create local demand
  - Make use of FOSS where feasible
- Foster local software industry capabilities
  - Business environment
  - Encourage relevant quality certification
  - Access to finance
- Strengthening legal framework
  - IPRs, e-payment, e-transactions
Public Procurement as a Tool to Boost Domestic Demand

- Public sector – a major potential client for software companies >> public tenders for e-government
- 1. recognize the link: public procurement & local industry dev.
- 2. map opportunities and barriers + identify public projects suited to involve local software suppliers
  Gather information on size and structure of local software sector
- 3. train enterprises on tender procedures
  Ensure SME involvement >> attention to transparency, openness and clarity
- 4. adapt procurement process
  o Modular design, set inter-operability standards, adopt quality certifications, apply open standards and FOSS, encourage joint ventures or local presence (to guarantee post-implementation support)

A Role for International Partners

- Capacity-building
- Training
- Application development
- Strengthen legal and regulatory frameworks
- Create demand by using software expertise in developing countries when developing software applications for their development projects
Conclusion

- Importance of software capabilities is rising
- Greater opportunities for engaging in software projects...
- ...and seizing them requires active involvement by Governments and their partners
- Strategies should seek to balance exports and domestic sales...
- ... and leverage partnerships with other stakeholders
- Goal: to move from passive adopters of foreign technology to developers of relevant local applications

"Companies in every industry need to assume that a software revolution is coming."
Marc Andreessen, Wall Street Journal, 20 August 2011