

**INDIAN INFORMATION TECHNOLOGY:
KEY TRENDS AND POLICIES -- IT'S JUST THE BEGINNING ...**



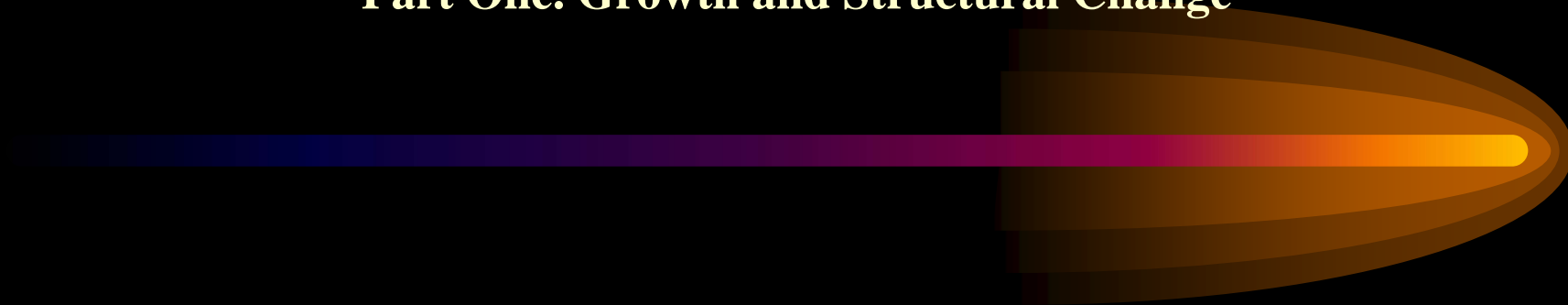
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Part One. Growth and Structural Change



The greater attention given to the Indian IT industry

1. Continued expansion in foreign firms owned establishments in India
2. Surge in the outsourcing business
3. IT's emergence as favorite sector for local Indian investors and talented entrepreneurs
4. Rising number of Indian firms investing in own establishments outside India - 212 Indian software firms had offices overseas by 1999
5. Listing of Indian IT firms on overseas stock exchanges - Infosys first listed on Nasdaq
6. Surge in Indian professionals all over India seeking education and jobs in IT in India and overseas
7. Launch of the National IT Task Force in 1998 - paradigm shift in importance given to IT
 - Provide vision to make India an IT Superpower in 10 years
 - Formulate comprehensive agenda to promote IT and tackle impediments: Action plans software, hardware and long term IT development investment agenda in key sectors
 - Envisages collaborative partnership between government and private sector
 - Implementation to be facilitated by creation of special Ministry of Information Technology
8. Launch of ambitious state-level IT policies and investment plans - paradigm shift attention
 - Promote private investment, develop physical infrastructure, human resource and government IT
 - Implementation to be facilitated by creation of special Departments of Information Technology (DOIT)

Conclude:

- *The Indian IT industry has more than 30 years of history but it is only in recent years that it has begun to emerge as a significant force in the Indian economy and internationally*

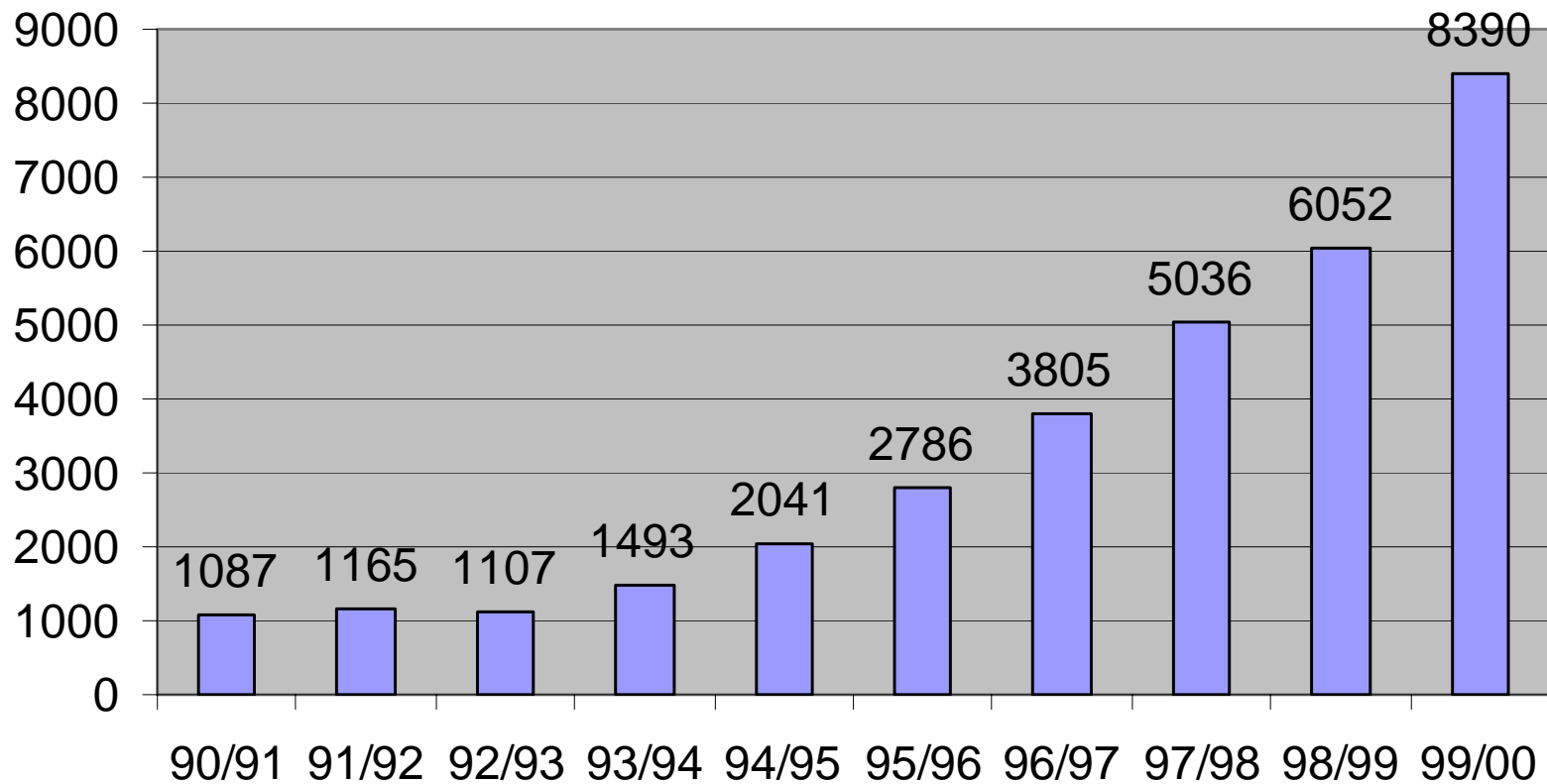
Indian IT industry growth trends

1. IT industry growing at 40 % per annum (\$US current prices 1994-99)
2. Earned revenue growth from \$1 billion 1990 to \$6 billion 1999: envisaged to reach \$100 billion by 2008
3. Still less than 1 % in global software product & packages market but in certain segments share is 10-20 %
4. Number of IT professionals in India has grown from 6,800 in 1985 to 56,000 in 1990, 160,000 in 1997 and 250,00 in 1999 and is projected to reach more than 1.5 million by 2008
5. Number of IT professionals of Indian origin in America, Europe and Pacific Asia is growing fast
6. Industry growth resulting from rapid growth in (i) foreign investment with 100 % equity holding, (ii) local Indian firms plus (iii) joint ventures and marketing & technical collaboration schemes/strategic alliances between Indian & foreign firms

Conclude:

- *Indian IT industry is still only in its very early stages of development both internationally and domestically*
- *If current trends prevail the IT industry growth may well result in that its share of GDP rises from 1.5 % today to around 12 % in 2008; it may account for 1/3 of India's total exports and a large part of imports* (Projections by R. Mitra)

Indian IT: Total earned revenue software, hardware, peripherals, training, maintenance, networking and others (USD million)



Penetration of PCs, telephones and Internet

- Lagging behind East Asia in PCs, telephony and Internet per capita
 - Explained by low per capita income, various bottlenecks, etc
- Low but rising telephony density
 - Only 17.5 million telephones for 970 million population in 1998: but telephony density and access is rising faster than before; cable & wireless started explode; community connectivity solutions; Telecom Policy
- Low but rapidly rising PC numbers
 - Number of PCs has risen from 630,000 in 1994 to 3.2 million as of March 31 1999, out of which 820,000 sold in FY1998/99; TV penetration already 60 million
- Internet explosion
 - Industry experts believe that number of Internet users will explode from about 1.4 million today to 37 million by the year 2003; VSNL state monopoly in service provision has been broken

Conclude:

- *Given India's 1 billion population the absolute numbers for PCs, telephones, Internet etc are going to be very large within 10-20 years alhtough not as big as for China*
- *It is only the beginning – major growth expected in a wide range of IT products and services*

Software industry growth: domestic market and export

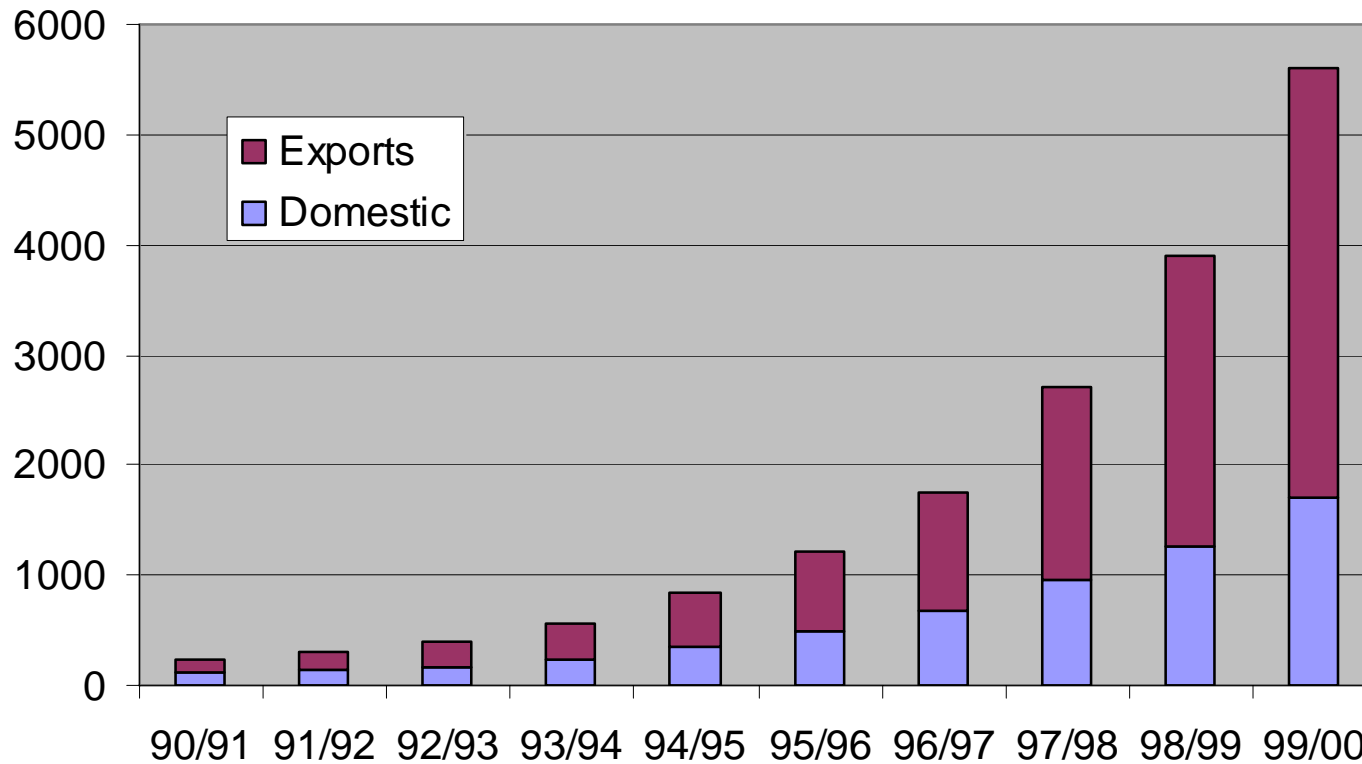


- Unlike some East Asian countries software exports (not hardware) has been the key driving force in the 1990s
- National IT Task Force envisages a software sector with \$70 billion annual earned revenue by the year 2008 out of which:
 - \$50 billion software exports, and
 - \$20 billion (or more) software domestic market sales
- Exports is expected to remain key to growth but the rate of growth in the domestic market is envisaged to eventually overtake that of exports

Conclude:


- *Continued strong growth is expected not only for software exports but also in the domestic market*

Software industry growth in India (Earned revenue in USD million current prices)



Source: Nasscom

Hardware industry growth: domestic market and export

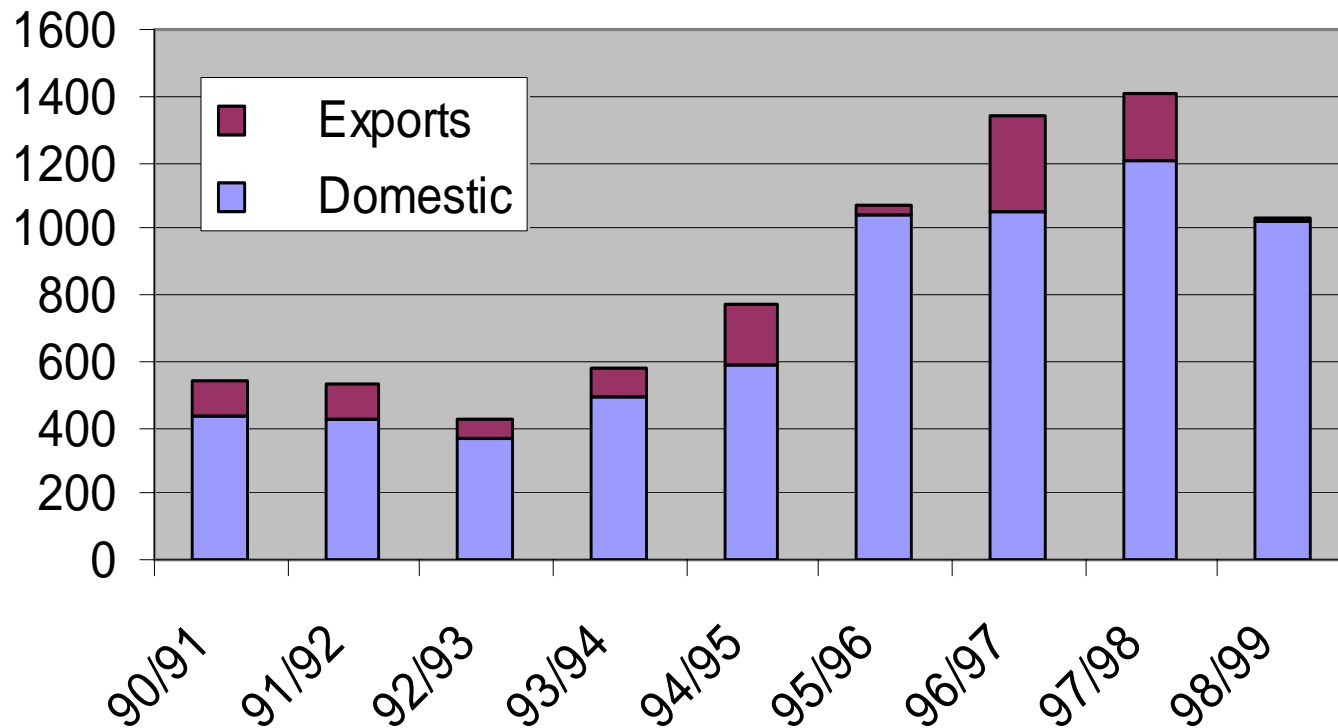


- Hardware is lagging behind the software sector in growth and competitiveness
- East Asia has performed better in developing competitive hardware sector
- Surge in domestic hardware demand including imports in 1990s, but volume still small compared to high income economies
- National IT Task Force projects that hardware sector (and other) will grow to \$ 30 billion by 2008

Conclude:

- *Hardware sector continues to lag behind software industry but is destined to grow and become significant in the long run*
- *Reforms are needed to boost hardware sector growth and competitiveness*
- *Some argue that India has potential to develop large hardware sector both for exports and domestic market*

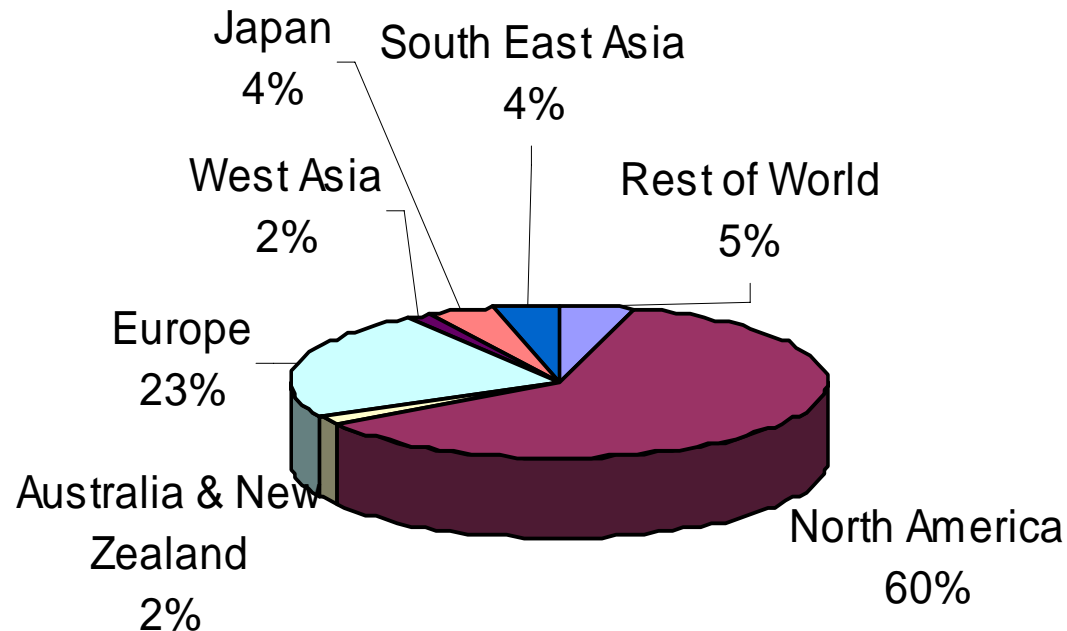
Hardware industry growth in India (Earned revenue in USD million: current prices)



Source: Nasscom

Destination of Indian software export

Indian Software Export Destination, 1998/99



Conclude:

- US export market is dominating but Europe and Asia are also significant and growing
- Major scope to develop investment and trade links with Pacific Asian countries: Competition but also complementarily in hardware/software/manpower
- Parts of the Indian IT industry is developing global presence

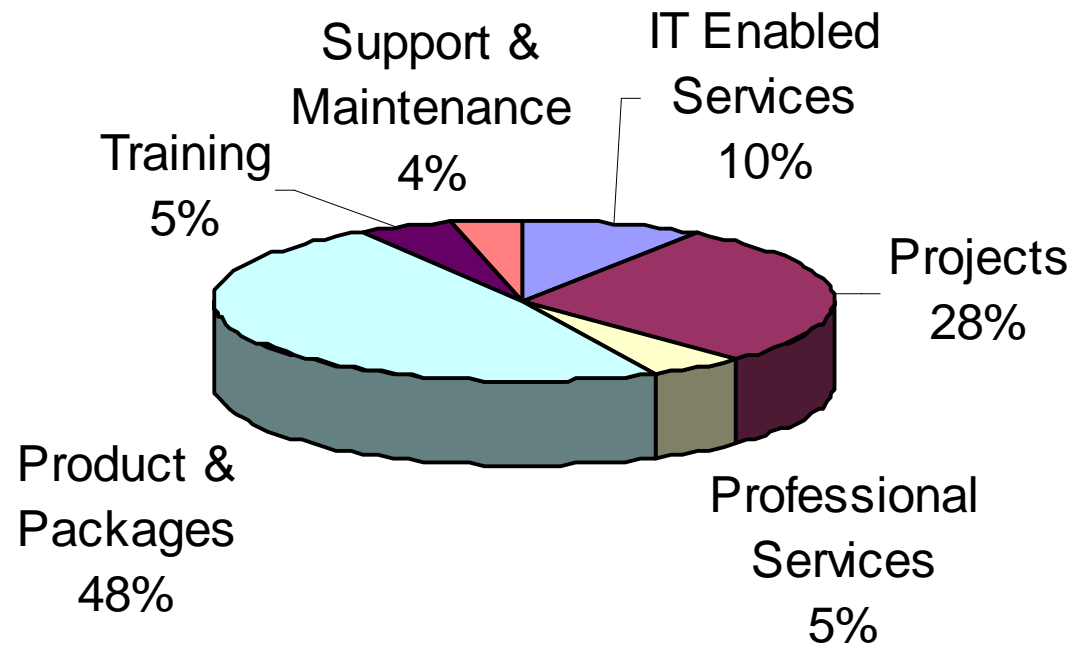
Structural change: trends and future

- Markets: Rapid growth in both export and domestic market
- Software industry: Rapid growth and structural change
- Hardware industry: Gradual “catch up” in both domestic market and export
- Content industry: Rapid growth in both “foreign” and local content industry
- Convergence and change in industrial organization: Gradual change

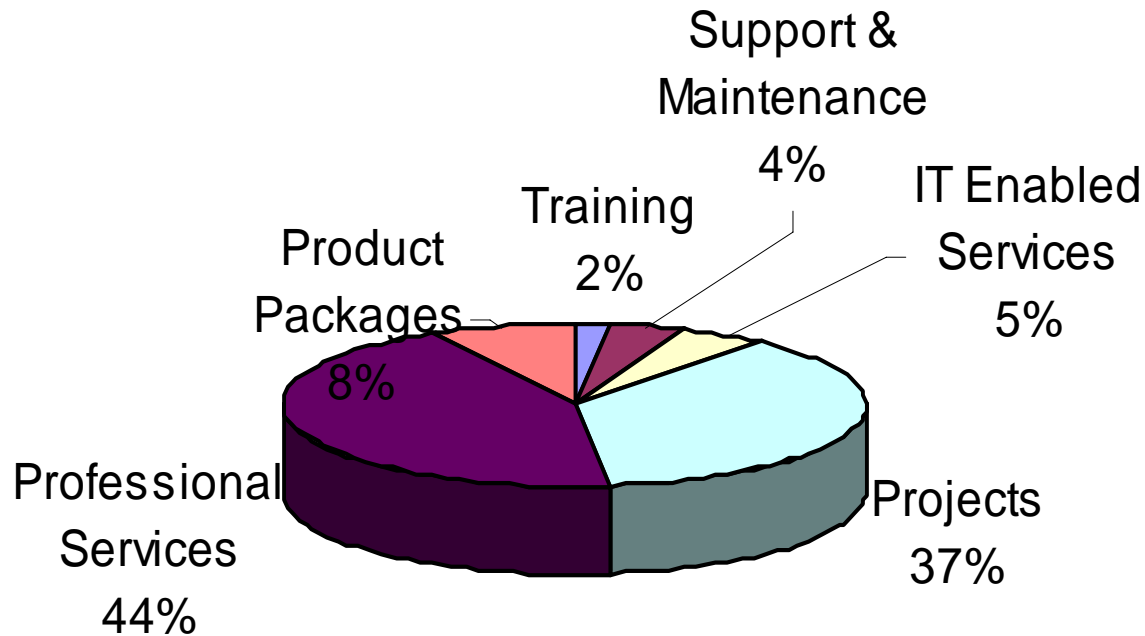
Conclude:

- *Not only exports but also domestic market is growing fast in a wide range of market segments*
- *IT spread from that of an enclave phenomena to wider impact on urban and rural areas and across all sectors*
- *Indian IT is not a homogeneous industry: still mainly lower end but rapidly diversifying and becoming more sophisticated*
- *Both lower and higher value added end of the market are growing*
- *It would be wrong to underestimate the India IT industry on notions that its comparative advantage is only in low end of software services, Y2K, and body shopping etc. The industry is still in its early stage of development and given time it has potential to become increasingly diverse and sophisticated in areas such as: Euro solutions, software package development, IT enabling services, Enterprise Resource Planning, Internet and electronic commerce and multimedia*

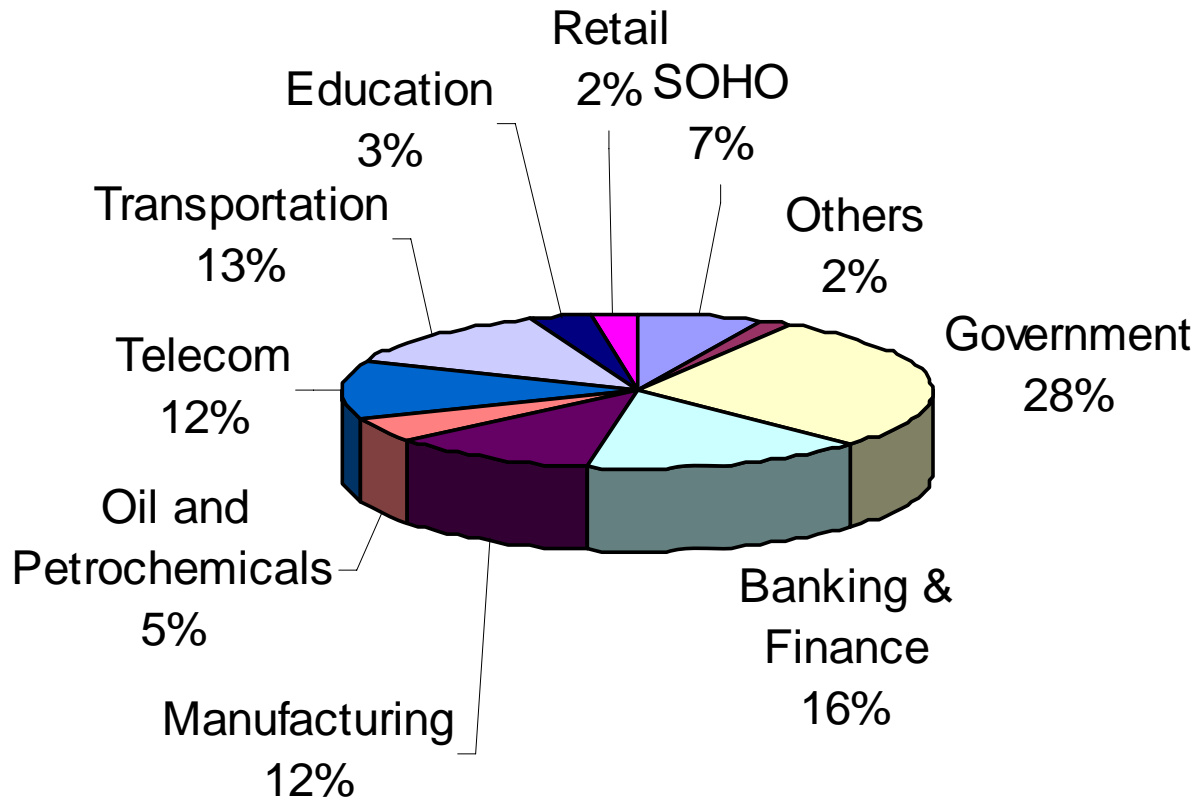
Indian Domestic Software Industry by Type of Activity, 1998/99



Indian Software Exports by Type of Activity, 1998/99



Indian Domestic IT Market by Sector, 1998/99



Part Two. Strengths and Weaknesses



Strengths – competitive advantages

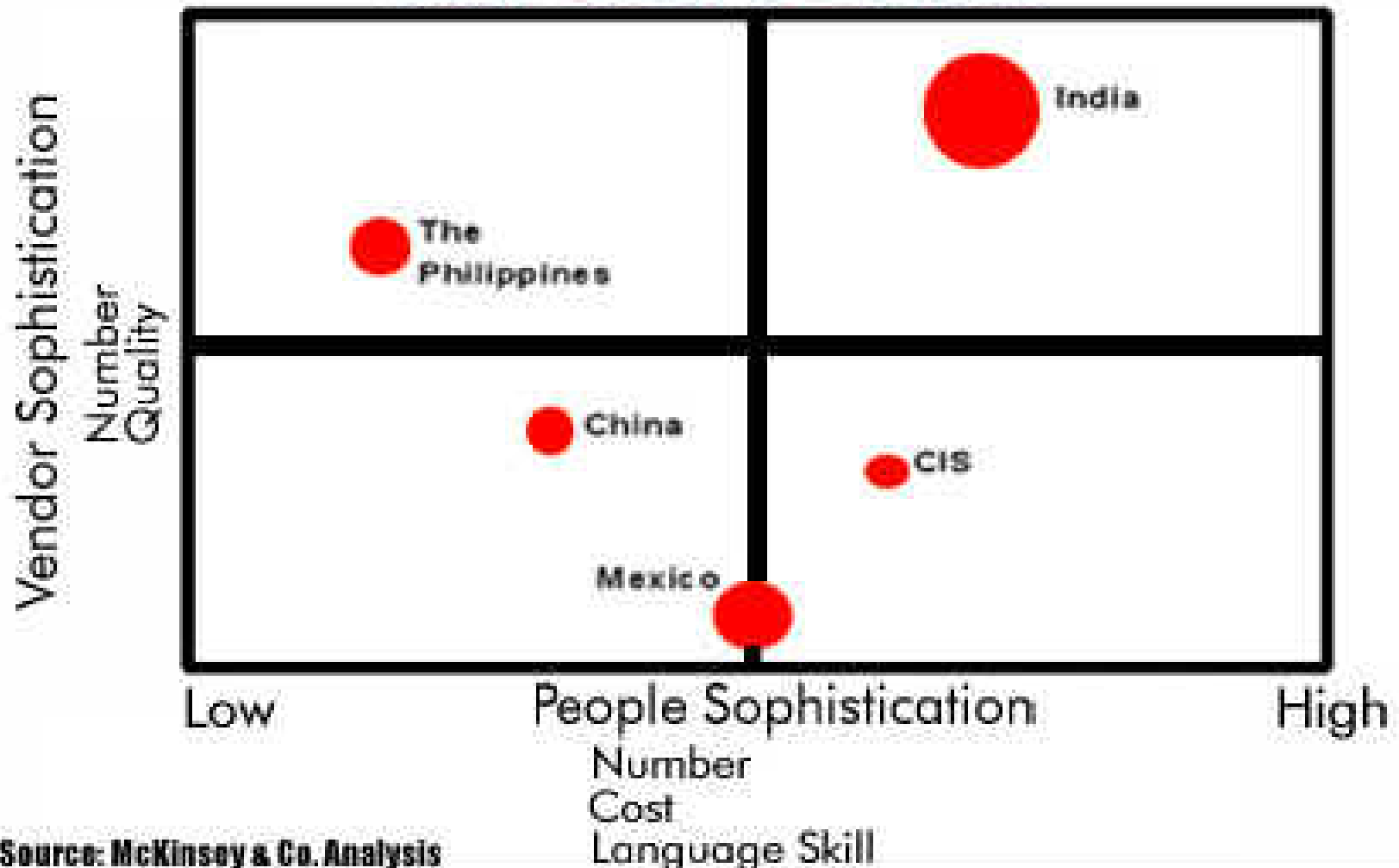
1. Favorable positioning in taking advantage of strong external software service demand coupled with timing of Indian software export surge and India's early identification as target for outsourcing
2. Large pool of educated and skilled manpower
3. Mobility and motivation of manpower
4. Costing advantages
5. Language, time zone and other advantages
6. Vendor number and sophistication: significant pool of indigenous and foreign firms and strategic alliances

Conclude

- *Considerable potential - much more can be done. So far India has only tapped a fraction of its potential comparative advantages in developing IT. It can be argued that the industry could and can grow even faster if impediments were tackled more effective.*

India's Competitive Advantage in Cross-Border IT Services

**India is best positioned for
Cross-Border IT Services**



Impediments – need for improvements and opportunities



1. Human resource development
2. Physical infrastructure, telecommunications in particular
3. Governance, legal and regulatory framework, management systems, processes
4. Finance instruments to fund both public and private sector projects
5. Affordability and technology choices
6. Private sector development limitations

End remarks

- If not a “superpower” India is likely to be an “eminent” IT power and ICT will transform Indian economy and society dramatically within the next 10-20 years.
- We are only seeing the very beginning of the emergence and impact of Indian IT both domestically and internationally.

An expanded version of this presentation will be posted next week on the US-PECC web site:

<http://www.pecc.org/ITSummit>

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