Software Offshoring - Risks and Opportunities

Stephen Seidman, Dean
College of Computing Sciences
New Jersey Institute of Technology

Larry Finkelstein, Dean
College of Computer and Information Science
Northeastern University

Some Recent Articles

- *Wired*, 2/04
  - The new face of the silicon age; how India became the capital of the computing revolution
- *Wall Street Journal*, 1/29/04
  - IBM documents give rare look at sensitive plans on “offshoring”
- *Salon.com*, 1/12/04
  - No safety net for programmers

- *CIO Magazine*, Fall/Winter 2003
  - Jobless in America
- *NY Times*, 2/15/04
  - What is the real impact of offshoring on the software industry?
  - How can we respond to it?

What’s going on?

- What’s the basis for the alarmist press coverage?
- What area of software development is primarily being impacted?
- How many jobs have actually moved overseas?
- What sort of jobs?

What are the actual trends?

- Source material: Article by Fred Niederman in *IEEE Computer* (January 2004).
- What sort of hard data (or serious estimates) do we have for IT offshoring?
  - 12% of US IT-producing companies have moved jobs offshore. (2003 ITAA data)
  - 10% of IT work currently performed in US IT-producing companies will be offshored. (Gartner Group estimate)

What is the Pathway to Offshoring

- Source material: Article by John McCarthy for Forrester Research, (December 2003)
- Stages for Fortune 1000 Companies
  - Bystanders 60%
  - Experimenters 25-30%
    - Some interaction with vendors but offshoring is not a key element of their overall IT strategy
  - Committeds 5-10%
    - Scaled efforts to incorporate sophisticated governance techniques, focused efforts with 2-3 providers
  - Full exploiters < 5%
    - Development of global sourcing as a core skill and investment in the IT process maturity to take a high percentage of work offshore

- The four stage migration process typically takes 24-60 months or more
- Must coincide with parallel governance evolution
  - Establishment: Develop and articulate overall offshore strategy
  - Encouragement: Governance evolves to drive usage
  - Advancement: Attention shifts to upgrading IT processes and methodologies

Further Data

- Can we break this down for different sectors of the industry or different job classifications?
  - Only 3% of non-IT-producing companies have moved jobs offshore. (2003 ITAA data)
  - Only 5% of IT work currently performed in US non-IT-producing companies will be offshored (Gartner Group estimate)

- Do we have any longitudinal data?
  - We have experience with periodic job fluctuations in IT (and in engineering).
  - We have experience with the impact of offshoring on manufacturing.
  - It isn’t clear how these can be combined to make predictions for the impact of offshoring on IT jobs.

- How appropriate are analyses with manufacturing examples?
  - A recent report in the McKinsey Quarterly claimed that benefits accrue to countries that outsource jobs to other countries. The report is based on broad economic data across industries -- does it apply to IT?
- Do we have any hard data on trends in computing enrollments (or graduations), broken down by student level or origin?

Factors Limiting Offshoring

- Ancillary costs (vendor selection, transition, layoffs, lost productivity, cultural issues,…) are estimated at between 15% and 55% above the contract.
- Salaries are increasing in India (~20%/year)
- Security issues
- Intellectual property issues
- Loss of knowledge of business intelligence imbedded in IT

What's the short-term impact?

- We need good data
  - on employment of recent graduates,
  - on employment of computing professionals with experience,
  - on undergraduate and graduate enrollment,
  - on domestic and international enrollment.

What's the long-term impact?

- Here are two possibilities:
  - A significant portion of software development by IT-producing industries moves away from North America and Western Europe.
  - The increase in the manufacturing of software due to offshoring leads to a higher utilization of software and therefore to more software jobs in the US.

How should we react?

- Undergraduate programs
  - Design programs to prepare students for jobs less likely to go offshore; elements include
    - More communication (including cross-cultural communication) and business skills
    - Treatment of global IT issues
    - Blending of general skills with domain-specific skills (e.g. internships, co-op programs, dual degree programs)
  - Prepare for fewer but higher-quality undergraduate students

- Master's programs
  - Prepare for smaller programs with fewer international students?
  - Design hybrid programs with other disciplines?
- Doctoral programs

  - Prepare for fewer international students
- A NY Times article last week indicated that decline

- PR
  - Should the professional bodies develop a focused PR campaign to promote IT as a career?
  - Right now the discipline is receiving a lot of negative press and it is impacting the perception of IT as a long term career choice amongst high school students.