Java Economy in India: A Conservative Estimate

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Java

- Invented by Sun Microsystems in 1995

- Portable, secure, platform independent, based on its open standards

- One of the fastest growing programming environments in the world

- Worldwide community of over five million Java developers

- Over 50% of Indian IT workforce comprises Java developers

- Has provided essential thrust to the Indian IT momentum

Contribution of Java

- Indian IT Sector

- Embedded Software
    - Mobile ringtones
    - Mobile Gaming
    - Smartcards

- Opportunity Costs

- Other Costs

Indian IT Sector

- Constituent Sectors →**Hardware, Software, Services**

- Software sales comprise enterprise packages like SAP with Java for front and back-end integration → **Not quantifiable**

- $2.2 billion Java Application server market for J2EE servers - Websphere, Jboss and BEA Weblogic Server in 2004

- Scaled by 30% AGR and % Indian Java developers

Worldwide Java Application Server Market, 2004	$ 2.2 billion
Worldwide Java Application Server Market, 2006	$ 3.72 billion=2.2*1.3^2
Total number of Java developer, India	.3 million
Java Developers, worldwide	4.5 million
Indian Java Application Server Market	**$ 0.25 billion**

Indian IT Sector

- IT Services comprise hardware, software and training services

- Hardware & hardware services not considered

- Software service revenue scaled down by Java percentage of software developers ~ 50%

- Similar scaling for training services

Indian IT Sector

- Indian IT sector revenues

Category	Revenues (Billion USD)	Java related revenues
Hardware	7.14	-
Software	1.78	.25
Services		
Hardware Services	1.16	-
Software Services	19.6	9.8
Training Services	.33	.165
BPO Services	7.21	NA
Total	**37.3**	**10.22**

All figures from Indian IT Top View 2005-06

Embedded Java

- Java-based software applications on mobile phones, electronic components and control systems

- Major constituents → Mobile gaming, ringtone and smartcards

- Mobile gaming a high potential area in India due to open standards and OS neutrality

- Emergence of specialized game development studios like Paradox and Bangalore-based Dhruva Interactive

- India developing as an outsourcing hub for global wireless mobile gaming market

Embedded Java

- $100 million Indian mobile game-development industry with 80% AGR

- 20% domestic demand to become 30% ($ 102 million) by 2010

Year	Market Size ($ million)	Growth Rate	Local Demand ($ million)
2004	5.6	69%	_
2005	18.1	81.9%	_
2006	100	80%	20 (=20%)
2010	340	_	102(=30%)

- 80 million handsets in India

- 20% of revenues of Indian music industry (=Rs 140 crore 0r $31mn) from mobile music in 2005

Embedded Java

Estimating by number of handsets	
Number of Java Enabled handsets worldwide, 2004	350 million
Java enabled mobile ringtone market worldwide. 2004[7]	3.5 billion
Total number of handsets in India, 2006	83 million
Percent of Java-enabled handsets sold in India, Nov 2005	40%
Total Number of Java enabled handsets in India	33.2 million (= .4* 83)
Java enabled mobile ringtone market in India, 2006	332 million (=3.5/350*33.2)
Estimating by the mobile gaming market	
Java enabled mobile gaming market worldwide, 2004	3 billion
Java enabled mobile ringtone market worldwide. 2004[10]	3.5 billion
Java enabled mobile gaming market in India, 2006	100 million
Java enabled mobile ringtone market in India, 2006	116 million (=3.5/350*100)

Java revenues from the mobile ringtone market

Embedded Java

- Indian Smart Card industry at $47.5 million in 2004 (Frost & Sullivan) with AGR of 50%

- Projected at $62.4 million for 2006

Revenues in 2004	$47.5 million
Growth Rate	48.4%
Revenues in 2006	$ 104.6 million (=47.5 *1.484^2)
Percent of Java Smart Cards	60%
Estimated Java Smart Card market,2006	$ 62.4 million

- Launch of the national ID card project for issuing over 600 million ID cards to spur growth rate

- Population, rising employment levels and the entry of MNCs in India to also contribute

Embedded Java

Mobile Gaming Market	$ 100 million
Mobile ring tone market	$ 116 million
Estimated Java Smart Card market , 2006	$ 62.4 million
Total	**$ 278.4 million**

Total revenues of the Indian Embedded Java industry from major focus areas

Opportunity Costs

- **Open Java**

  - Reduced risk of vendor lock-in
  - Low migration costs
  - More efficient markets
  - Developers prefer non-proprieary software

Total Number of Developers in India,2003	0.6 million
% of Java Developers in Indian IT pool[13]	50%
Java Developers in India,2003	0.3million (=50% of 0.6mn)
Growth rate of Indian IT Sector	30%
Total Number of Java Developers in India, 2006	.66 million (.3* 1.3^3)
Cost of .Net License	$1111 (approximately)
Total Savings	**$ .73 billion**

- **Increased Efficiencies**

  - Indian E-commerce market up to **$ 1 bn in 2006**

  - Java ensures secure, real-time transactions, dynamic content generation etc.

Other Factors

- **Increased Employment**
    - Growth rate of Indian IT developers estimated at **30 % per annum**
    - India to have over 3.2 million IT employees by 2012 (NASSCOM and McKinsey) generating $119 billion in revenues
    - Half of 1.28 million 2006 IT pool (=**.66 million**) to be Java programmers

- **Better Compensation**
    - Annual salary growth of IT employees is 17.9% which is 28% higher than the national average

Java Developers in India, 2006	.66 million
Average salary (INR 300K-600K or $6000 to $12000 pa)	$10000 (with INR 450K)
Total salaries	$6.6 billion

Total Salaries of Java Developers in India

Other Factors

- Taxes to government

Tax component	% Levied	Taxed Amount	Tax (million)
Packaged Software	8% (Excise duty)	$250 million	$20 million
Company revenues	35.7% (Corporate tax-domestic company)	$9965 million	$3557 million
Individual Income	30% (assuming annual salary above 2.5 lakh)	$6.6 billion	$1980 million
Total			**$ 5557 million or $5.5 bn**

Tax contribution from Java related activities

Consolidation

- Only partial quantification
  - Lack of data
  - Lack of reliable assessment parameters
  - No precedence
- Size of Java Economy is $16.98 bn

Java-based revenues from the IT Sector	$ 10.47 bn
Embedded Java Revenues	$ 0.28 bn
Opportunity Costs – open source benefits	$ 0.73 bn
Taxes to Government	$ 5.55 bn
Size of Indian Java Economy,2006	**$ 16.98 bn**
GDP of India, March 2006	$ 695 bn
Java Economy as % of GDP	**2.44%**

Alternative Estimation

- Back-of-the-envelope calculation

- Size of the Java economy in this way comes out to be **$14.65 billion**

- The GDP of India for the year 2006 is $ 695bn and the **Java economy is over 2.1 %** of this

Size of the global Java Economy,2005	$ 100 bn
Total Number of Java Developers worldwide,2005[18]	4.5 mn
Total Number of Developers in India,2003	0.6 mn
% of Java Developers in Indian IT pool	50%
Java Developers in India,2003	0.3mn (=50% of 0.6mn)
Growth rate of Indian IT Sector	30%
Java Developers in India, 2005	0.507mn(=0.3*1.3*1.3)
Size of Indian Java Economy,2005	$11.27bn(=$100bn/4.5mn*0.507mn)
Size of Indian Java Economy,2006	**$14.651bn(=$11.27bn*1.3)**
GDP of India, March 2006	$ 695 bn
Java Economy as a % of Indian GDP	**2.1%**

Conclusion

- Difference in the consolidated and estimated figure
  - Lack of quantifiability of opportunity costs
  - IT and the embedded Java revenues are only partially considered
  - Secondary effects and related IT Spending not accounted (110%)

- Lower bound estimate of Java economy in the range of 2.1% – 2.44 % ($14.65 - $16.98 billion) of the Indian GDP

- Indian Java economy is 10%-15% of the world's Java economy

- The growth rate of Java in India is higher than its global growth

- Java's economic impact on India to increase in future as the Indian Java Economy comes of age

- We need to understand such impacts of Open source and Open Standard software so that the benefit is quantifiable

Thank You