



The Indian ICT Industry: Current Trends and Future Challenges

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*Acknowledgements - Rajdeep Sahrawat, VP NASSCOM for Data
S Sivakumar, ITC Agribusiness for e-choupal Case*

The Indian School of Business



- Research driven, globally focused B-School
- Kellogg, Wharton play an active role
 - All area leaders are from Kellogg and Wharton
- “Innovative” portfolio faculty model
 - Steady state
 - 60-70% coursework taught by resident faculty
 - Currently
 - 30-40% taught by thought leaders from global B-schools
 - Tenure system
 - Managed by an area leader from Kellogg/Wharton
 - Comparable to the top 25 US research B-schools
- Student body
 - Post Graduate Program (420)
 - Executive Education Program (growing rapidly)

What is CITNE?



- **ISB's latest "Centre of Excellence"**
 - Wadhvani Centre for Entrepreneurship Development
 - Centre for Analytic Finance
 - Centre for Global Logistics and Manufacturing Strategies
 - Centre for IT and the Networked Economy (CITNE)
- CITNE is a inter-disciplinary research centre
 - Rigorous, relevant and impactful ICT centric research
 - Worldwide Information Systems (IS) research community ↔ burgeoning global-scoped Indian ICT industry
- **Mission**
 - Foster ICT centric research and education
 - a) to propel the Indian ICT industry to the next level globally,
 - b) the promote the country's economic development

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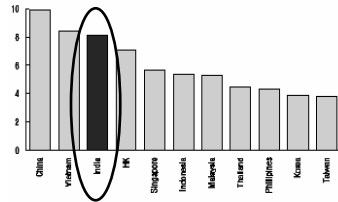
Agenda



- **India Inc. Background**
- **An Agrarian to a Service Based Economy**
- **Growth of IT/ITeS Sector**
 - The Global Delivery Model
 - Operational Excellence
- **Current Trends and Challenges**
 - The Domestic Market
 - CASE - e-Choupal: Towards an Inward Looking IT Revolution
 - Educational Reform
 - Talent Gap
 - Research
 - Industry Academia Linkages
- **Emerging Opportunities**
 - Knowledge Intensive Services
 - R&D

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India Inc. - Some Facts



FY06 GDP Growth in India is Amongst the Fastest in the Region

Source: Citigroup

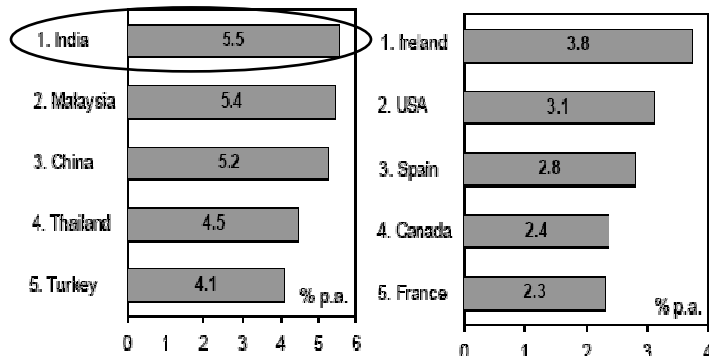
- India's GDP has grown at nearly twice the global rate over past 20 years
- Steady annual growth in real GDP, industrial production and domestic demand of 5-6%
- Sustained real growth in foreign investment inflows (FDI and FII) since economic liberalization (1991)
- Cumulative forex reserves of ~USD 150bn

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Projected High Growth



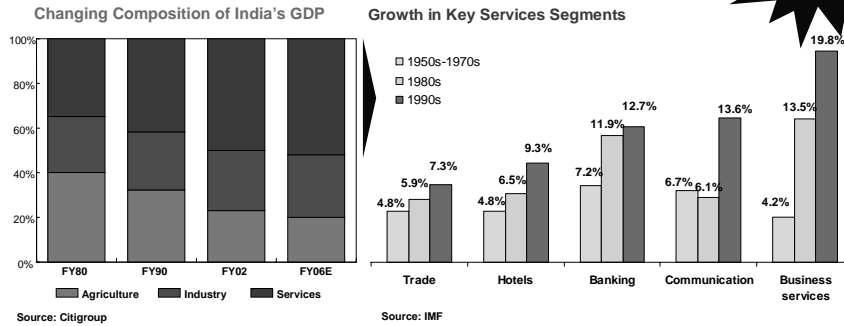
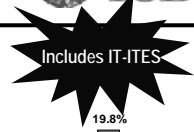
The top 5 growth centres until 2020 (GDP growth 2008-2020)
 ... In the emerging markets ... and In the OECD countries



Source: Deutsche Bank Research

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A maturing economy led by high growth in services...



- Over the last decade the Indian economy has transitioned from an agrarian economy to a predominantly services based economy
- Key services sectors - Personal services, trade, hotels, banking, communications and business services

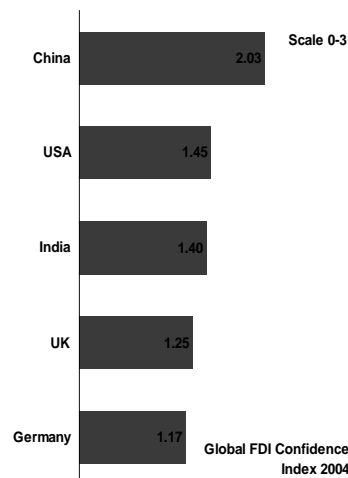
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Progressive liberalization and increasing investor confidence...



| Sector | FDI / FII Limit* |
|--|------------------|
| Insurance | 26% |
| Civil Aviation | 49% |
| Private Banking | 49% |
| NBFCs | 49% |
| Trading | 49% |
| Telecom | 74% |
| IT-ITES | 100% |
| Power (excl. atomic power) | 100% |
| Hotel & Tourism | 100% |
| Drugs and Pharma Mfg. | 100% |
| Infrastructure (roads, highways, ports, harbors) | 100% |

* Automatic approval



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Top 5 recipient countries in strongest FDI sectors

| Business services | Financial services | Motor vehicles (incl. Accessories) | Electronics |
|---------------------------------------|---|--|---|
| India USA UK China France | USA China India Russian Federation UK | China USA India Russian Federation Japan | China India Japan USA Taiwan |
| ICT | Food and beverages | Pharmaceuticals | Base chemicals |
| India USA China UK Japan | USA China Russian Federation Brazil India | USA India China Spain Japan | China USA Japan India Germany |

Source: IBM-PLI – Global Investment Locations Database, GILD

IT - ITeS Sector Evolution

Key Milestones



- Y2K
- Brain drain
 - Labor arbitrage
 - H1B consultant
- Satyam's John Deere Apt. "Offshore"
- Global delivery model
- Quality
 - CMM
 - Operational Excellence
- Captives
 - GECIS → Now Genpact
- Bandwagon effect
- Strategic partnerships
 - INFY now competes with Accenture for full circle client relationships
 - Accenture now poaches INFY engineers in B'lore
- Reverse brain drain

1990s

2006

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Indian IT - Market Structure



- The industry has a pyramid structure
 - Tier 1 players (i.e. Top 5 firms) account for 44% of total software exports
 - Tier 2 players account for 16% of the industry
 - MNC Captives account for 31% of the industry
 - Focused players account for 4% of the industry and
 - Small players (< Rs 100 crores) account for 6% of the industry

| Annual turnover | 2001-02 | 2002-03 | 2003-04 | |
|-----------------------------------|--------------|--------------|--------------|-----------|
| Above Rs. 1,000 crore (\$ 210 mn) | 5 | 7 | 9 | Tier I |
| Rs. 500 crore-Rs.1,000 crore | 5 | 5 | 8 | } Tier II |
| Rs.250 crore-Rs.500 crore | 15 | 15 | 24 | |
| Rs.100 crore-Rs.250 crore | 25 | 43 | 53 | |
| Rs.50 crore-Rs.100 crore | 55 | 73 | 56 | |
| Rs.10 crore-Rs.50 crore | 220 | 244 | 367 | |
| Below Rs. 10 crore | 2,483 | 2,644 | 2,653 | |
| | 2,808 | 3,031 | 3,170 | |

Source : Nasscom

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Big Three



- In 2005, the big three Indian IT services firms
 - Infosys
 - Tata Consultancy Services (TCS)
 - Wipro
- Surpassed \$2 billion in revenue
- Reported an astounding compound annual growth rate of more than 30 percent

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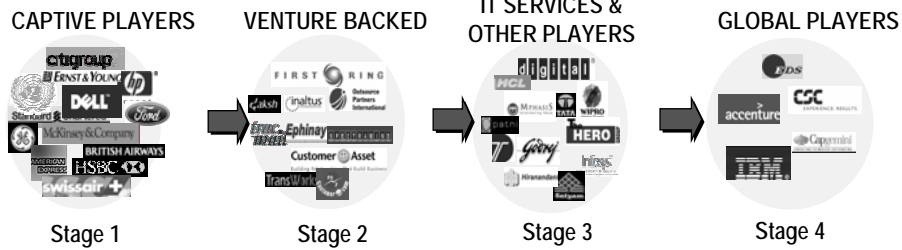
Industry Trends



- Approximately 2/3rd of the Fortune 500 companies source IT-ITES services from India
- Offshore outsourcing is being actively embraced by not only large organizations but also middle market companies in the US
- Competition from Multi National IT services providers who are setting up offshore presence aggressively
- The Build-Operate-Transfer(BOT) model appears to be gaining momentum
- Reverse brain drain with '000s of Indians returning to India after years of leadership roles in Silicon Valley start-ups and technology MNCs
- India becoming APAC hub for many MNCs (SAP Labs, Nokia, ADI, Cisco); Besides, many Asia-Pacific companies leveraging India better (LG Soft, Samsung R&D, Sony R&D, D-Link, Huawei)

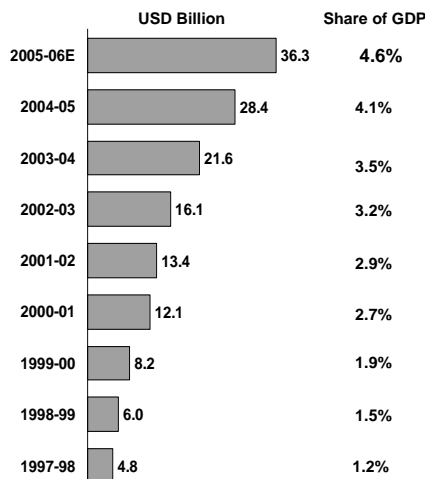
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Evolution of ITES in India...



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Indian IT-ITES sector grew by 28% in FY06 and currently accounts for 4.6% of the country's GDP

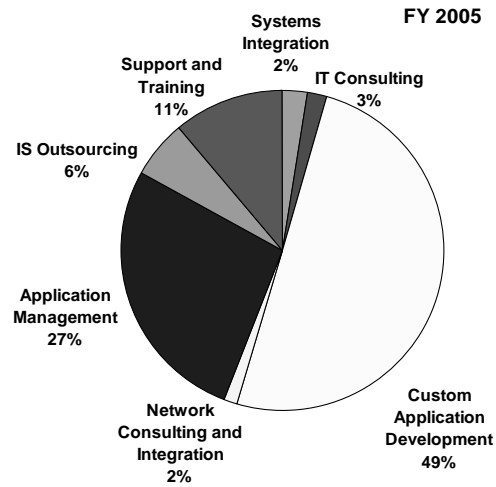
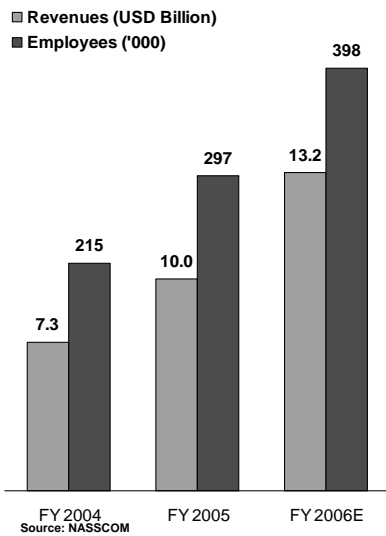


Source: NASSCOM

- Sector revenue exceeded USD 36bn in FY06 - growing at a 25% CAGR over the past decade
- Exports account for nearly two-thirds of the total - growing at a 36% CAGR over the past decade
- Industry employment exceeds 1,293,000 - a net addition of over 1 million employees over the past six years alone

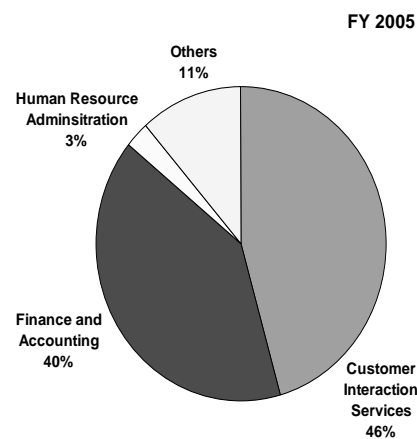
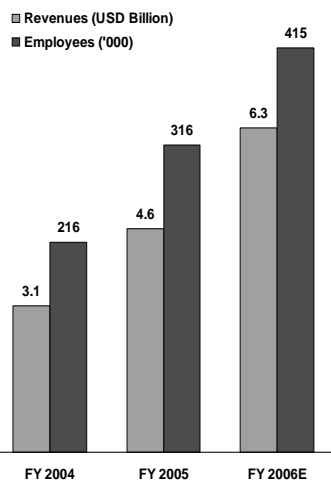
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IT services exports lead, accounting for 35% of the total, growing at 32-33% (FY06E)



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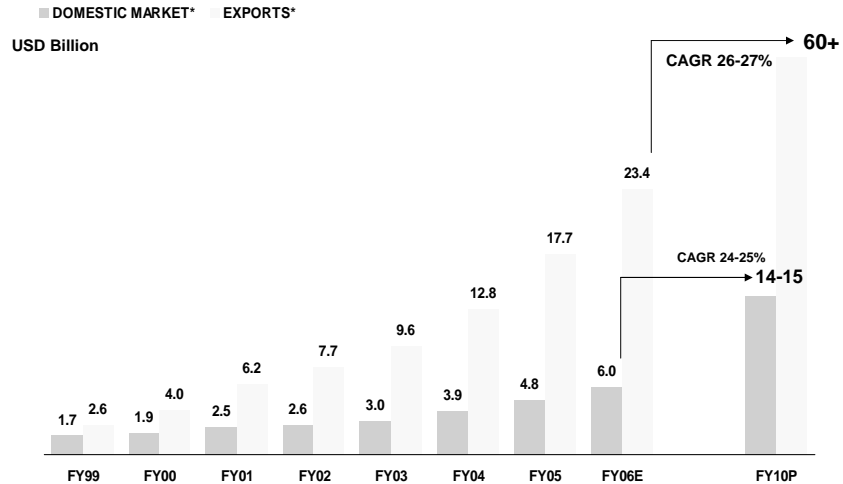
ITES-BPO exports* to grow by 37%, estimated to reach USD 6.3bn (FY06E)



* Reclassified to exclude services now included under engineering and R&D
Source: NASSCOM

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Positive outlook for Indian IT-ITES; industry set to achieve targets for 2010



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India's pillars of success



- Access to a large, growing pool of highly qualified talent
- A high degree of quality orientation and demonstrated service delivery expertise
- Keen emphasis on information security reflected in the comprehensive legal framework and elaborate security practices supplemented by enabling intervention
- Improving telecommunication infrastructure
- International standards in real estate and office facilities
- Enabling (and progressively improving) business environment through strong government support; incentives, favorable regulations and policy

...delivered at a sustained and compelling cost-value proposition

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Future Growth

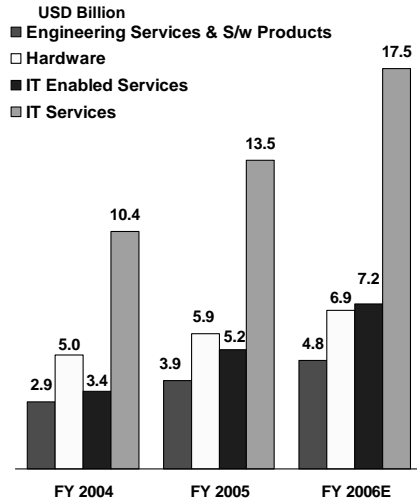
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Knowledge Work

- R&D work being done out of India
- Over 1700 US patents filed in 2003
 - Texas Instruments (225 patents)
 - Intel (125 patents)
 - Philips (102 patents)
 - Cisco (120 patents)
- Engineering services
- Legal and litigation support
- Financial research (Mumbai)
 - Lehman Bros Research
 - JPM

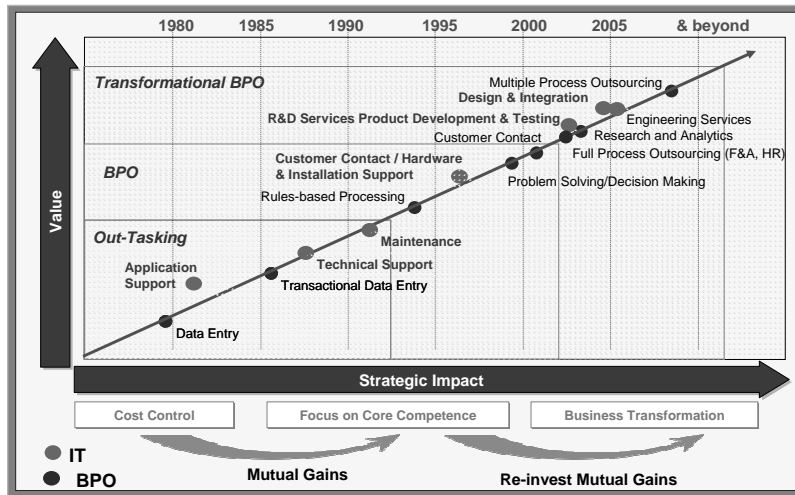
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Growth driven by service line depth,...



- Demand for traditional services remained strong
- Emerging service lines such as infrastructure outsourcing, software testing, etc., in IT outsourcing
- Analytics, research and functional outsourcing (F&A, CIS and HR) in ITES-BPO gained greater visibility
- Engineering and R&D services emerged as an independent segment

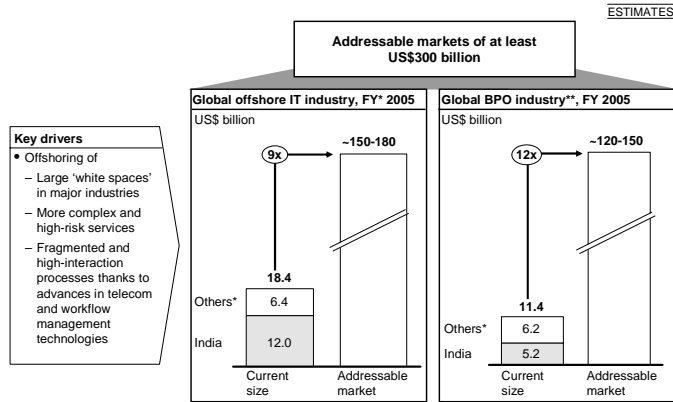
...increasing supply-side maturity...



Source: neofT

Note: Services listed are indicative not exhaustive

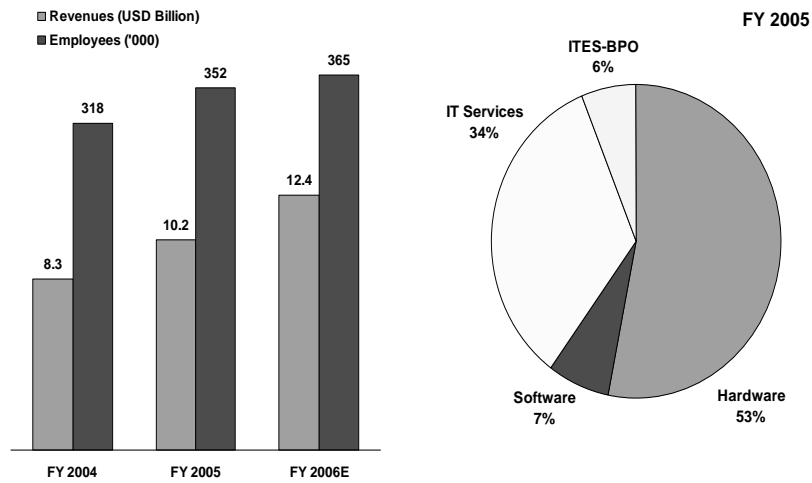
Significant headroom for growth, less than 10% of the export market captured till date...



* Financial year, April 1 to March 31
 ** Includes addressable markets in currently offshoring industries
 *** Includes Philippines, China, Russia, Eastern Europe, Ireland, Mexico

Source: NASSCOM McKinsey Report 2005

Domestic market coming into its own, to grow by nearly 22% in FY 2006



Source: NASSCOM

Challenges

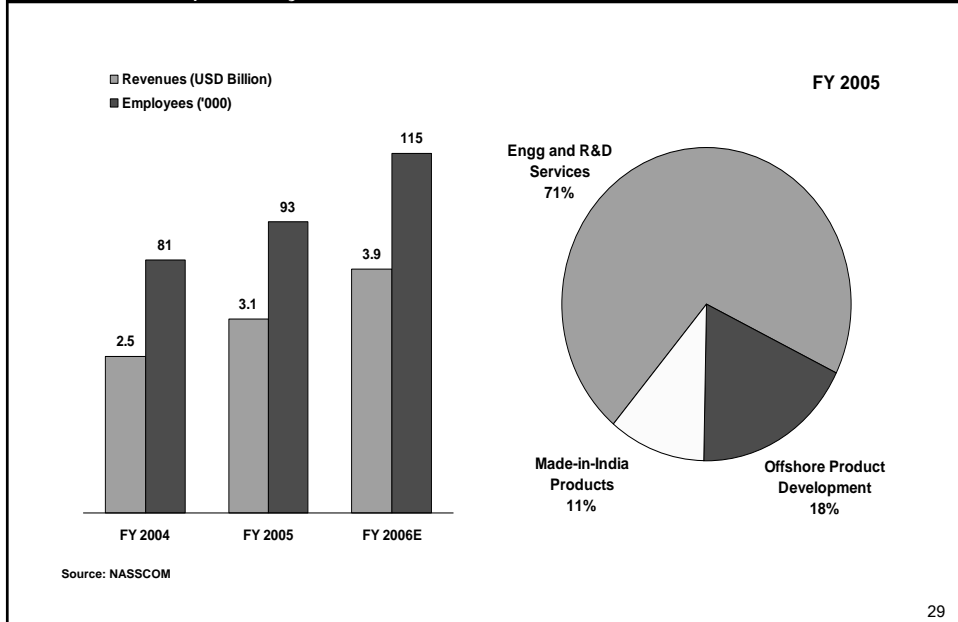
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Industry Risks

- Wage inflation - 10-15%
- Attrition
- Talent gap
- Indian rupee appreciation
- SLA expectations of clients
- Domain expertise
- Ability to move up the value chain
- Tax Holiday – Sunset clause in FY 2009-10

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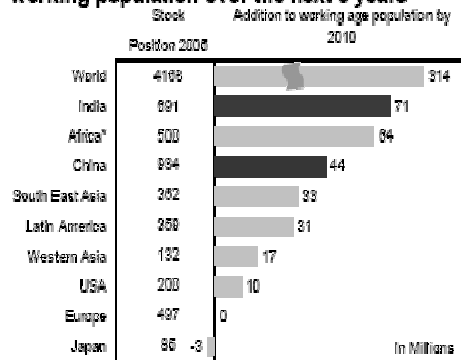
Engineering and R&D, software products hold significant opportunity for India - growing at 43% and 25% (CAGR FY 2003-06E), respectively



Demographics - Suggest Domestic Market Growth



India the largest contributor to growth in the working population over the next 5 years



Source: CBO, FBI, UN, Morgan Stanley Research, E= Morgan Stanley Research Estimates
 *Note: Africa includes a group of 56 countries

India as a Market



- ICT investments not restricted to services, over USD 5 billion committed towards manufacturing related investments in India by global ICT majors in 2005
- Global auto majors such as Hyundai, Ford, Skoda, Suzuki and Mahindra have made India a manufacturing base for particular models of cars
- Other multinationals such as Toyota, GM and Daimler Chrysler are making India a hub for components
- Engineering services, textiles, tourism, education - some of the newer/emerging sectors where India is expected to play a major role in the coming years

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However...



- **Low PC penetrations**
 - 50-60 million
- **Increasing mobile penetration**
 - 120M subscribers
 - Adding 6/month
- **A lab for m-commerce/3G**
 - Spectrum becoming available in 2007
 - ISB-UMN team provided auction design!
- **VC/PE activity growing in mobile space**
- **Yahoo India's slogan**
 - "Internet on your mobile phone"
- **Big impact possible at the BOTTOM OF THE PYRAMID**
 - ICT changes lives!

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CASE

ICT Promoting Development

ITC's e-Choupal

(With permission from Mr. S Sivakumar,
CEO- ITC Agri Businesses)

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Let's listen to a Farmer

- Ramdeo Patel
- Resigned to the fate? Ramdeo is not alone, he actually speaks for 110 million of his fellow farmers.
- A large majority of them are in the same situation even today
- Each of whom earn just a fifth of the average income of the rest of Indians

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...despite



- **Excellent resources:**
 - Plenty of arable land
 - Rich & diverse agro-climatic zones
 - Strong research system
 - Large & growing markets

- **And legendary resourcefulness:**
 - Works very hard (whole family is on the farm)
 - Takes risk (on weather, markets)
 - Is innovative (adapting technology, managing risk)

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...because of



- **Small size (Average < 1.5 Ha)**
 - × Resource-poor, weak bargaining power
- **Geographical dispersion (> 600,000 habitations)**
 - × Impacts access to real-time information
- **Heterogeneity (agro-ecological conditions, knowledge, investment & risk-taking ability)**
 - × High need for customisation
- **Fragmented agri business industry**
 - × Poor vertical coordination, not much value addition
- **Weak infrastructure (Physical, Social, Institutional)**
 - × Impacts access to markets, high transaction costs, increases risk (yields, prices)

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Demands of the globalising trade



1. **Transition from supply-driven to demand-driven value chains**
 - Quality as per customer needs (& changing diets)
 - Traceability to farms & farm practices (SPS, TBT)
 2. **Competitiveness in Price / Value equation**
 - Increased farm yields
 - Lower transaction costs along the chain
- ↑ **Further accentuating the need for...**
- Customised knowledge
 - Real-time & relevant information
 - Access to quality inputs at competitive prices
 - Effective vertical coordination of the value chain
 - Efficient Price discovery & risk management

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Capabilities of IT



- ✓ Real-time multicasting
 - ✓ Seamless workflow
 - ✓ Storage & retrieval of data
 - ✓ Broadband connectivity
 - ✓ Convergence of multimedia
-
- ⇨ Unbundling & rebundling the components of a transaction
 - ⇨ Collaboration & vertical coordination
 - ⇨ Virtual aggregation
 - ⇨ Decoupling back-end from front-end

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Leveraging IT: ITC eChoupal Illustration-1



- **The traditional mandi system for sale Video**
 - Pressure to sell due to sunk cost of transportation

- **eChoupal Price Discovery Video**
- **eChoupal Price Discovery Part II Video**

- ⤴ **That unbundled the price “information” from sales “transaction”, leveraging the real-time multicasting ability of Internet, and empowered the farmer to decide on when & where to sell**
 - And reduced the transaction costs too (by avoiding multiple handling that is necessary in mandi system)

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Leveraging IT: ITC eChoupal Illustration-2



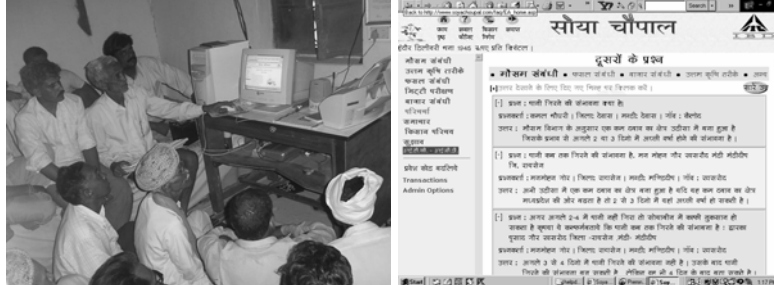
- **Farm input transaction Video**

- **Again empowering the farmer, this time by bundling...**
 - What to use (knowledge)
 - When to use (information)
 - Supply chain (transaction)

- **Through collaborative workflow across entities**
- **Decoupling ‘source’ of information & knowledge with ‘delivery’**

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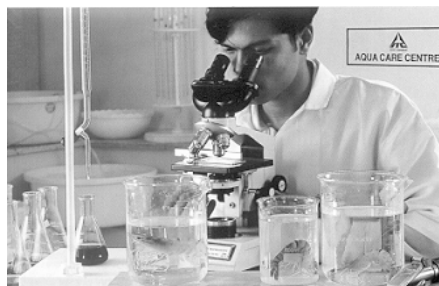
Leveraging IT: ITC eChoupal Illustration-3



- Web casting of best practices videos, and FAQs
 - access to knowledge with ease
- Interaction across villages through chatting & emails
 - Helps in knowledge sharing among themselves and brings meaning to the 'e' prefix to choupal

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Leveraging IT: ITC eChoupal Illustration-4



- One-to-one interactive ability of Internet, together with relevant testing facilities (soil / water / virus)
 - delivers customized farming solutions

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- **Broadband connectivity**
 - For remote diagnostic of crops
 - And interactive extension

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- **For the farmer**
 - Market aligned production, higher productivity, better farm-gate prices
- **For ITC**
 - Cost effective procurement of quality farm output & New Business Opportunities
- **For other Partners**
 - Cost effective reach (of various goods & services) to the huge market in rural India
- **Above all, for the nation**
 - Global competitiveness, without putting the small farmer at a disadvantage

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Concluding Thoughts

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Where are we today

- Outsourcing - A success
- Ability to scale - Well Demonstrated
- Suite of service offerings - Evolving
- Complexity - Medium - High
- Contract size and life - Small
- Businesses can be monetised - \$\$\$\$\$

- *Can we bring the benefits to the vast majority of the population?*
- *In chaos lies opportunity !!*

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