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Confederation of Indian Industry



BCG–CII REPORT ON IT ENABLEMENT OF
INDIAN BUSINESS

IT FOR INDIA — NEW HORIZONS, NEW OPPORTUNITIES

MARCH 2013

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The Confederation of Indian Industry (CII) works to create and sustain an environment conducive to the growth of industry in India, partnering industry and government alike through advisory and consultative processes.

CII is a non-government, not-for-profit, industry led and industry managed organization, playing a proactive role in India's development process. Founded over 117 years ago, it is India's premier business association, with a direct membership of over 7,100 organizations from the private as well as public sectors, including SMEs and MNCs, and an indirect membership of over 90,000 companies from around 250 national and regional sectoral associations.

CII catalyses change by working closely with government on policy issues, enhancing efficiency, competitiveness and expanding business opportunities for industry through a range of specialised services and global linkages. It also provides a platform for sectoral consensus building and networking. Major emphasis is laid on projecting a positive image of business, assisting industry to identify and execute corporate citizenship programmes. Partnerships with over 120 NGOs across the country carry forward our initiatives in integrated and inclusive development, which include health, education, livelihood, diversity management, skill development and water, to name a few. The CII Theme for 2012-13, 'Reviving Economic Growth: Reforms and Governance,' accords top priority to restoring the growth trajectory of the nation, while building Global Competitiveness, Inclusivity and Sustainability. Towards this, CII advocacy will focus on structural reforms, both at the Centre and in the States, and effective governance, while taking efforts and initiatives in Affirmative Action, Skill Development, and International Engagement to the next level.

With 63 offices including 10 Centres of Excellence in India, and 7 overseas offices in Australia, China, France, Singapore, South Africa, UK, and USA, as well as institutional partnerships with 223 counterpart organizations in 90 countries, CII serves as a reference point for Indian industry and the international business community.

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CONTENTS

3	FOREWARD
4	INTRODUCTION
5	EXECUTIVE SUMMARY
7	INDIAN DOMESTIC IT MARKET—AN OVERVIEW Indian Economy: The Growth Story Domestic IT Market: An Untapped Opportunity Current Landscape and Future Outlook of Domestic IT Industry Future Trends for IT Spends in India Key Questions on Domestic IT Market
15	END USER PERSPECTIVE Evolving Role of IT in Indian Companies IT Capability Maturity of Indian Companies Challenges for IT Adoption at Indian Companies De-averaging IT Adoption across Industries Industry Deep Dive: Banking Industry Deep Dive: Telecom Industry Deep Dive: Manufacturing Industry Deep Dive: Media, Publishing, and Entertainment Industry Deep Dive: Retail Industry Deep Dive: Insurance Industry Deep Dive: Healthcare
36	IT SUPPLIER PERSPECTIVE Global Success of Indian IT Providers Domestic Opportunity for Indian IT Providers Challenges Faced by IT Providers in the Domestic IT Market Strategies Employed by IT Providers for Domestic IT Market
42	ROLE OF GOVERNMENT Role of the Government in the Domestic IT Market Current Status of IT Spends by the Indian Government Citizen Services: Current Status, Further Potential and Challenges Role of IT in Improving Process Efficiency across Government Undertakings Further Steps that will Help Leapfrog the IT Evolution Trajectory
54	IT FOR INDIA—A CALL TO ACTION Taking forward IT Adoption in India Eight Point Action Plan for IT Adoption in India
66	FOR FURTHER READING
67	NOTE TO THE READER

FOREWORD

CONFEDERATION OF INDIAN INDUSTRY has been making sustained efforts to create a conducive business environment to propel higher growth rate for India Inc. and will continue to play a meaningful role in this direction. CII believes that the adoption of Information Technology is a key transformational tool that will help India “leap-frog” to achieve competitive advantage for its growth.

India is at the forefront of the large IT–ITES market and is well established as a ‘destination of choice’. Having grown manifold in size and matured in terms of service delivery capability and footprint over the past decade, the Indian IT industry is now at an inflexion point—and faces a unique opportunity to enhance its role as a full-service, value-adding partner to the domestic industry as well. There is significant headroom in the addressable IT adoption opportunity for India Inc., and there are sizeable untapped opportunities across a wide spectrum of verticals. Also, the Indian IT industry is favourably positioned to benefit from its established delivery capabilities, which bear a key influence on user industries’ decision to adopt IT.

Over the next three years, the right choices by stakeholders of the Indian IT industry could effect a three-fold growth. The aspired target is aggressive, but is surely achievable, and will bring huge payoffs to India’s economy, employment and role in the global marketplace.



Mr. Kris Gopalakrishnan
President designate CII

Co-Founder and Executive Co-Chairman, Infosys Limited

INTRODUCTION

OVER THE LAST FEW years, businesses have been trying to harness the power of information technology to transform the way they work. In my interactions with CEOs across industry verticals, four common themes resonate:

- Increasing growth
- Building a competitive advantage
- Enhancing user productivity
- Reducing costs of operations

The Indian government's intent too is to drive growth, or should I say—'Inclusive Growth' and IT has a strong role to play in realizing this vision.

The Indian IT Industry has been a key driver in the new knowledge economy and expected to touch US\$ 100 billion in fiscal year 2013, approximately 7.5 percent of GDP. While it will continue to accelerate growth from international market, there is an opportunity for the industry to work closely with the government to kick-start the economy, go back to the higher growth levels and help other industry verticals gain a competitive advantage in global and domestic markets.

As the four interconnected technology megatrends—Mobility, Social, Big Data and Cloud, dominate the next decade, the IT industry has a compelling opportunity to bring a paradigm shift in the way technology gets adopted by businesses across verticals at lower costs and at scale. The BCG–CII report is a comprehensive fact-based view of requirements, capabilities, opportunities, and growth imperatives for the Indian industry through increased IT adoption—that will allow for focused decision-making by all stakeholders—IT suppliers, users, and the Government.

On behalf of CII, I would like to thank The Boston Consulting Group (BCG) for writing this report and for bringing together the insights of the Indian IT and IT User companies in this document. I am sure that this report will be useful for all stakeholders in the industry.



Mr. Bhaskar Pramanik
Chairman, CII National Committee on IT, ITeS and e-Commerce
Chairman, Microsoft India

EXECUTIVE SUMMARY

DRIVEN BY DOMESTIC CONSUMPTION, the Indian economy is poised to grow at fast rate in the coming years. Technology will play an important role in meeting the evolving needs of the Indian consumers. It is imperative that end user industries re-align their business models and continuously invest in new technologies to provide innovative value propositions to their customers. IT will also be a significant driver in the economic growth of our country due to its effect on increasing productivity and enabling innovation. With its growing influence on the economy, the Indian IT industry is expected to witness about 12 percent growth over the next four years, to reach a market size of about INR 1.8 lakh crores by 2016. IT services and software products will lead this growth, due to an increase in IT adoption by companies, shift towards outsourcing and emergence of new technologies.

IT adoption across end user industries is not the same—some sectors like banking, telecom and insurance have leveraged IT across their business functions, including the back-end organizational processes, customer facing activities and revenue generating initiatives, and are at an advanced stage in IT adoption. Sectors like education, healthcare, media and retail are relatively low IT spenders currently, but are expected to significantly increase their expenditure on this front in the future.

The role of IT in organizations is expected to evolve from simply being “order takers” to transformative “business partners”. To effectively leverage the IT, Indian companies need to develop the required IT capabilities—need identification, value assessment, vendor management, governance models, and IT talent management. End user companies in India are unique and have expectations around cost, unique user needs, expect more touch points and high quality delivery.

Several domestic IT companies have built strong IT capabilities in the last decade and today boast of a marquee global client base. While traditional pricing advantage that IT providers enjoy in global markets may not be relevant for the domestic market, they now have the opportunity to play in value-added areas by serving as optimization agents and transformation partners and deliver value through process improvements and technology-led transformations. IT providers are attempting to understand the unique and evolving needs of Indian end user industries aiming to employ India-specific strategies for the domestic market. IT providers are developing the required partner network, applying multiple cost levers and adapting innovative commercial models to fully tap the Indian opportunity.

The Government plays an important role in the IT market, both as a buyer and as a facilitator. In its role as a buyer, the Indian Government needs to catch up with the rest of the world on IT spending—it's IT spends as a percentage of GDP have been significantly lower than Governments for developed economies. In recent years, Government has taken the right steps in some areas for example, UID, education. Going forward, Government needs to focus on providing more IT-enabled citizen services, improving efficiencies in the public sector, investing in disruptive technologies, standardizing data, and promoting shared services. These initiatives will need to be supported by a strong execution and governance model to effectively leverage IT.

Going forward, all key stakeholders—the end users, IT providers and the Government—need to work in close concert to tap the IT opportunity successfully. We propose an eight point action plan for the end user industries, IT providers, and the Government:

1. End user industries need to create a clear vision for the role of IT in their organizations with well defined roadmaps
2. End user industries need to strengthen their capabilities to manage IT effectively by enhancing the required IT related systems and processes commensurate with the enhanced role that IT needs to play in today's context
3. IT providers and end user industries need to work collaboratively to identify business needs and opportunities, engage in joint planning and design, and structured performance tracking with a clear focus on achieving mutual objectives
4. If not already in place, IT providers should develop a differentiated India strategy
5. To be successful in Indian market, IT providers need to optimize their delivery model for lower costs
6. Government needs to facilitate IT adoption through policies, programs and incentives
7. Government should also facilitate development of quality IT workforce
8. Government too needs to partner with the private sector to leverage cutting edge IT and foster innovation by mandating and facilitating development of data and information standards along with building the required IT capabilities to orchestrate its IT projects

There is opportunity to transform the business landscape with enhanced IT adoption, and in turn create a significant contribution to India's GDP. End users, IT providers and Government will need to partner with each other to realize this vision.

INDIAN DOMESTIC IT MARKET—AN OVERVIEW

Indian Economy: The Growth Story

The global economy is showing signs of a paradigm shift—with Asia starting to establish itself as the global economic leader. India's growth, along with China, will play a key role in the transition of Asia into a global economic power.

India's growth story is driven by domestic consumption. India is blessed with a unique demographic situation where more than 55 percent of the total population was under the age of 30 years in 2011¹ (as shown in Exhibit 1.1). Rising income levels will lead to the emergence of a new middle class, with a much higher consumption demand, as compared to the past. The Indian middle class as a percentage of the total population is expected to grow from 44 percent in 2010 to 59 percent in 2020².

Rising income levels in India will fuel domestic consumption. India's real GDP (PPP, 2005 prices) is expected to grow at a healthy 6.7 percent during the current decade³.

1991 was an important year for the Indian economy. It was the year when India changed its economic policies which resulted in a long period of sustained growth for India's GDP. More foreign companies started operating in India, several industries were deregulated and the private sector in India

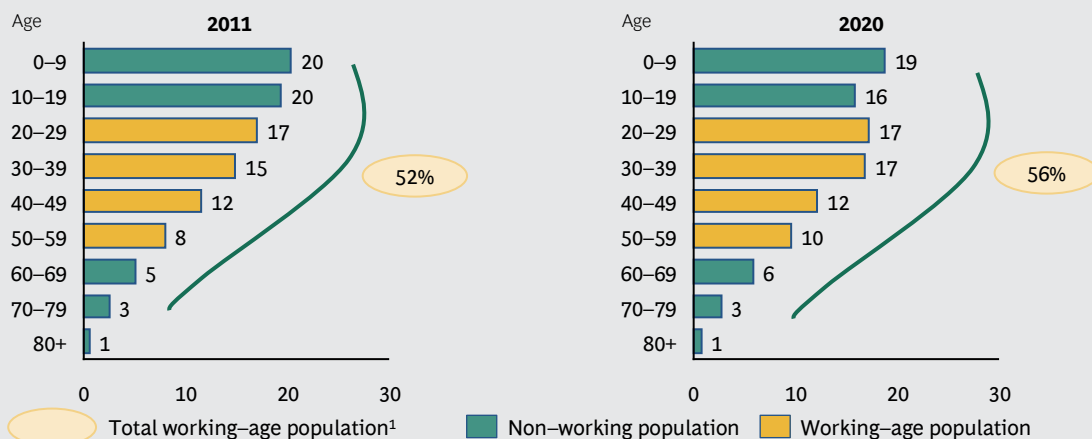
gained traction. BCG estimates show that by 2020, more than 75 percent of the total population would have grown up in a liberalized economy (i.e., post 1991 era)⁴. This segment of the population is more aware and has been exposed to the multitude of product and service offerings in the new liberalized economy that did not exist before 1991.

Their attitudes and behaviors are completely different from those before them. These consumers are willing to spend more for the right product / service, they are comfortable navigating the multitude of choices available to them and they are more aware of what products and services are offered across the world. Companies will need to re-align their business models to meet the expectations of this new India.

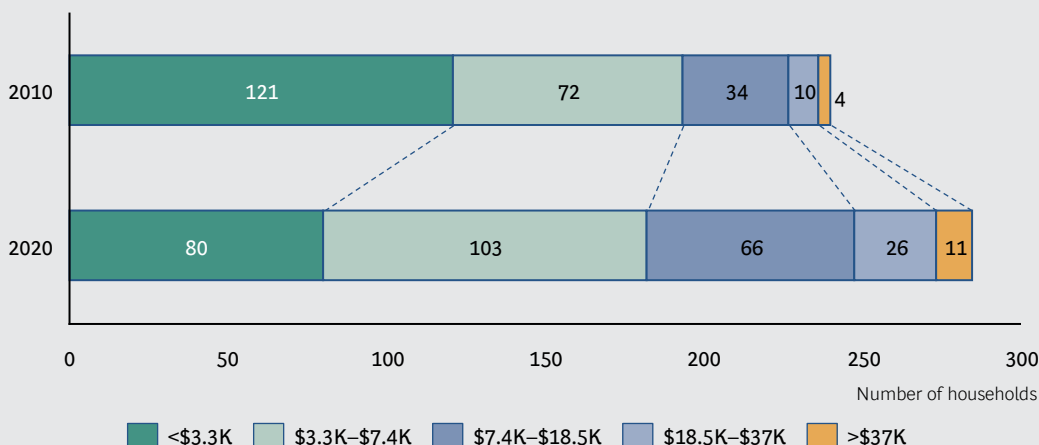
Increase in earning population, emergence of a new middle class and a new set of "liberalized" consumers would bring in a whole new set of opportunities as well as challenges for the corporate world in India. These consumers will demand a multi-channel approach where technology enabled processes offer convenience and new go-to-market propositions. In a recent BCG study—The Internet Economy in the G-20: The US\$ 4.2 Trillion Opportunity we estimated the impact of this trend on the internet economy in India. The contribution of internet to GDP in India is expected to increase from 4.1 percent in 2010 to 5.6 percent in 2016, with an

EXHIBIT 1.1 | India's growth story is driven by domestic consumption

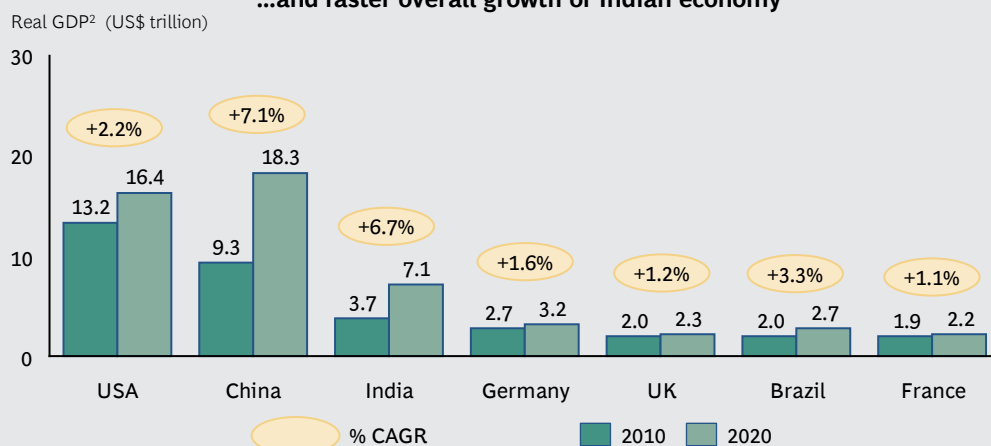
Earners outnumber dependents...



...leading to fast growth domestic incomes...



...and faster overall growth of Indian economy



Sources: Census of India 2001, Population projections 2001–2026 (December 2006); TeamLease India Labour Report 2006; United Nations; EIU; Euromonitor; BCG analysis.

¹Population between 20–59 years old.

²Real GDP, purchase power parity at US 2005 prices (US\$ trillion).

annual growth of 22 percent to reach a size of INR 11 lacs crores by 2016⁵ (as shown in Exhibit 1.2).

Indian companies are expected to benefit from such opportunities and build scale over time to play in the global market. Studies show that till FY2010, India had 141 “billion dollar” companies, which are expected to increase to more than 700 by 2020 (as shown in Exhibit 1.3)⁶. Most of these “billion dollar” companies will have a global footprint and will face challenges from global players. Among the many things that will help these companies succeed, effective use of IT will be an important one.

Technology will allow companies to adapt to the evolving Indian consumer needs and offer unique value propositions that were not feasible till now. IT will also help companies to compete in the global market by making them more efficient.

The role of IT is not limited only to consumers and companies, but also extends to the economy at large. The sector continues to add to employment through creation of new, more val-

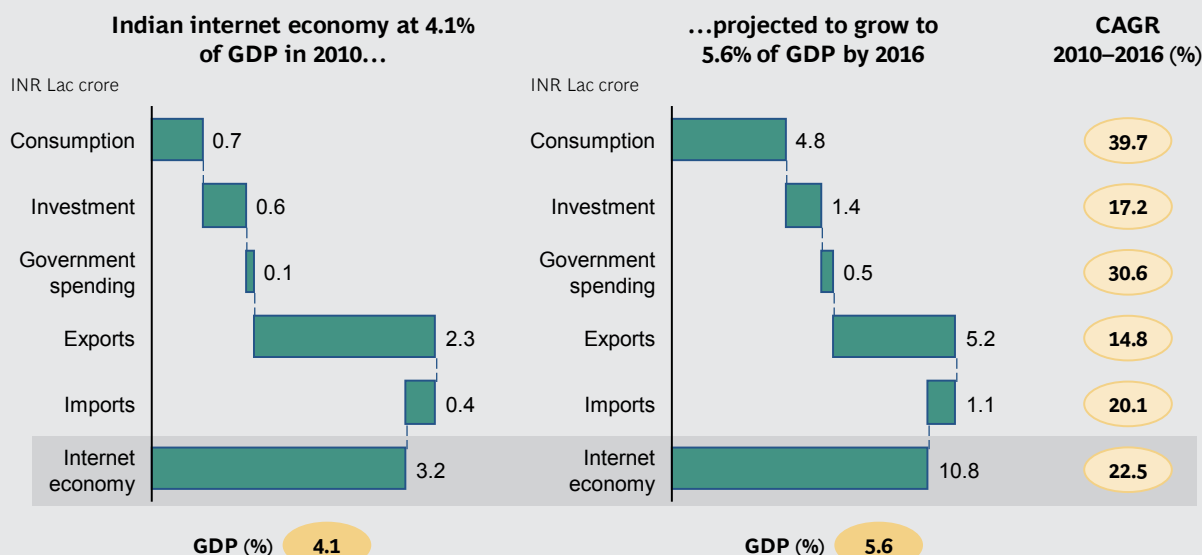
ue-added jobs. By helping create more jobs in other parts of the industry, the IT industry also has a multiplier effect. This direct and indirect effect on productivity and employment makes the growth of IT sector a key engine for the growth of the Indian economy.

Domestic IT Market: An Untapped Opportunity

A comparison of India's IT spends with more developed economies (as shown in Exhibit 1.4) shows that the India's overall IT spend as a percentage of GDP is less than 1 percent—significantly lower than the global average of 2.5 percent⁷.

As illustrated in Exhibit 1.4, more developed economies typically spend more on IT and as Indian economy grows, IT spending is likely to increase significantly. Greater IT spends lead to productivity improvement through process automation, incremental business on electronic medium and real time access to information. The labour productivity in India in 2011 was US\$ 9,310, compared to US\$ 69,900 in U.K. and US\$ 96,000 in The United States⁸.

EXHIBIT 1.2 | India's internet economy projected to grow to 5.6% of GDP by 2016—an annualized growth rate of 22%

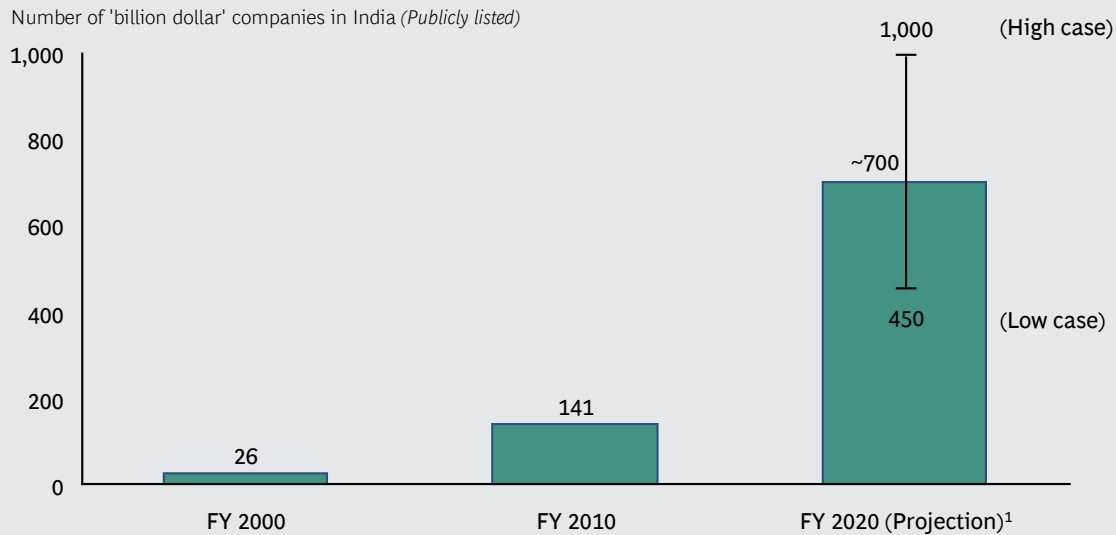


Sources: EIU, Statistical Handbook (Reserve Bank of India, 2011), Ministry of Science & Technology (Government of India, 2011), Telecom Regulatory Authority of India (November 2010), Nasscom Strategic Review 2011, Enterprise IT Spending by Vertical Market Worldwide (Gartner, September 2010), Ovum Telecom Quarterly Revenue CapEx Tracker (2011), Company reports (Vodafone Essar, Reliance Comm., Idea Cellular, 2011), PC Quarterly Statistics All Countries, Worldwide PC Shipments and Installed Base by Country / Market: 2008–16 (Gartner, September 2011), Fixed Broadband Forecast 2008–16 (Ovum, September 2011), Mobile Devices Revenue (Gartner, September 2010), Mobile Devices Business Consumer Split (Gartner, September 2010), Mobile Broadband Forecast 2008–16 (Ovum, July 2011), Computers and Peripherals in India (Euromonitor Int., September 2011), World Bank, ITU, BCG analysis.

Note 1: All growth rates are nominal i.e., including inflation.

Note 2: m–Commerce is included within online retail sales—i.e., ‘Consumption’.

EXHIBIT 1.3 | Billion \$ companies estimate for 2020

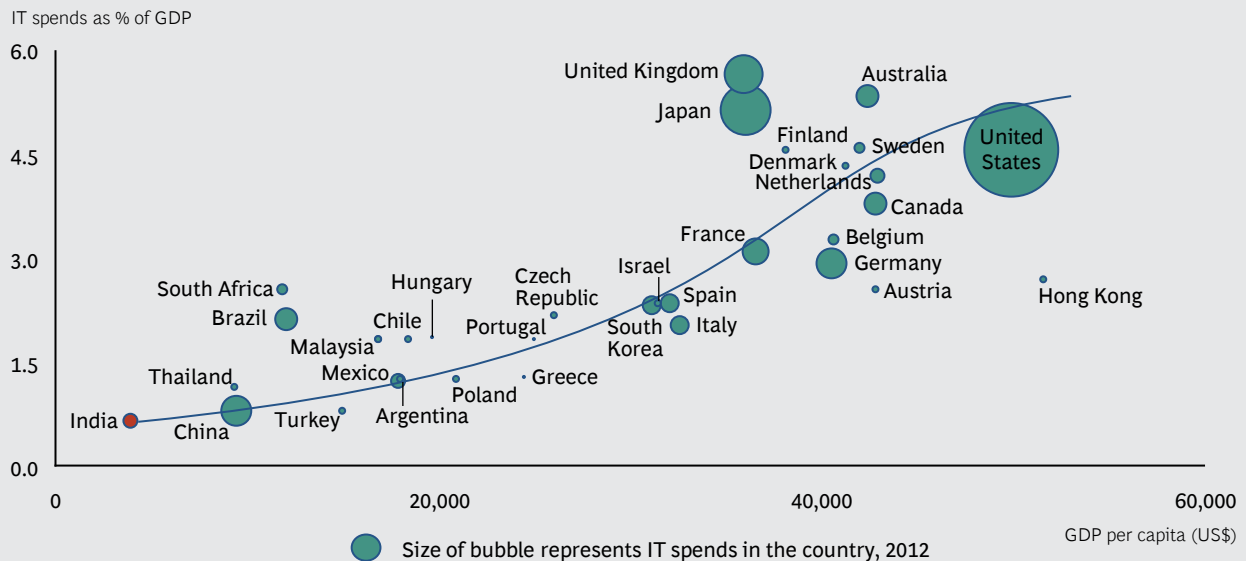


Sources: Thomson One Banker; Capital line; BCG analysis.

Note: Data is based on sales and pertains only to public companies.

¹Number of companies in 2020 estimated using two approaches; (i) Using 2005–10 CAGR of current >US\$ 50 million companies in sales and calculating how many fall in US\$ 1 billion+ category. (ii) Growth rate of # of \$1bn+ companies in 2000–10 used to estimate # of companies in 2020.

EXHIBIT 1.4 | Economic development will go hand in hand with increasing IT penetration in Indian economy



Sources: Gartner data; EIU; Web search; BCG analysis.

The United States has actively adopted IT, with well established business models developed around new digital innovations. In The United States, sustained investments in IT and effective use of technologies have led to an increase in productivity levels. This effect on increased labour productivity, combined with positive effect on employment, both direct and indirect, is likely to be a key driver for GDP growth in India in the years ahead.

Current Landscape and Future Outlook of Domestic IT Industry

The IT market in India for the year 2011 is estimated at INR 99,700 crores (as shown in Exhibit 1.5). IT services segment has the largest share at 50 percent of the total market, followed by the hardware segment at 32 percent.

IT SERVICES

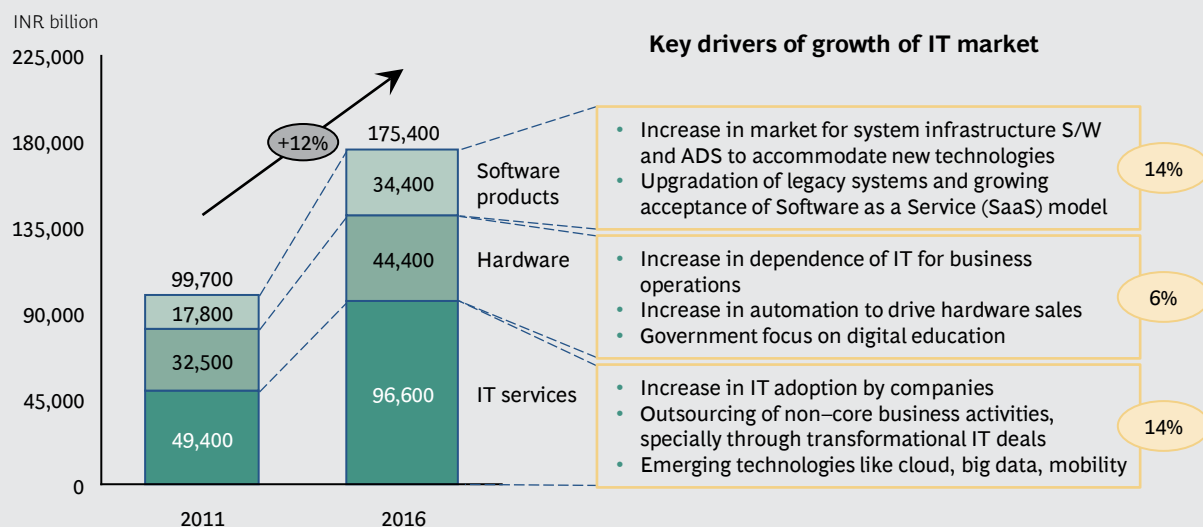
For the year of 2011, the total market size of IT services in the domestic market is estimated at around INR 49,400 crores, with infrastructure outsourcing and hardware support being the biggest revenue-generating services.

The domestic IT services market is growing the fastest amongst all domestic IT segments. Increase in IT adoption by companies, increase in size and scale of companies, outsourcing of non-core business activities including new transformational IT deals in various industry sectors such as banking and telecom and emergence of new technologies such as cloud and data analytic would drive the future growth of IT services in India.

Infrastructure Outsourcing: Infrastructure outsourcing is one of the biggest revenue-generating service lines in the domestic market. This segment is expected to grow at a healthy rate as companies will outsource the setting up and maintenance of IT infrastructure to third-party providers, driven by the following factors:

- Increasing need for companies to focus on their core competencies and invest in their core activities due to intense competition
- High-end skills required for maintaining and upgrading the complex IT systems to match the industry best practices that will be more difficult to manage internally

EXHIBIT 1.5 | IT industry in India is expected to grow at 12% with faster growth in IT services and software products



Sources: BCG analysis; Gartner.

Note: Hardware includes PCs, servers, storages, enterprise communication equipment, printers and other peripherals. It does not include fixed network services, mobile network service and mobile devices.

- Enhanced focus of companies on cost reduction and lean IT organizations

Hardware Support: Hardware support is the second largest segment within IT services. The market for hardware support will be driven by rising demand for IT systems and an increasing trend to outsource the maintenance of IT systems with a focus on reducing costs.

IT Consulting: IT consulting is expected to grow at a robust rate, driven by convergence of IT systems and solutions with business objectives and growing IT adoption to handle business complexities, rapidly evolving technology landscape in the corporate sector and curiosity of companies to test attractiveness of emerging technologies and implement them in business processes.

Business Process Outsourcing: BPO is a relatively small market in India and a large part of it is captive. However, there is a new trend related to third-party transformational outsourcing relationships between customers and service providers. BPO companies are also increasingly being established in tier 2 and tier 3 cities to enable service providers to deliver the services at lower costs.

Infrastructure and Network Integration Services: Demand for infrastructure & network integration services would primarily be driven by a need for synergies in IT systems across the global operations of organizations, emergence of complex IT systems and the need to enable them to communicate with each other.

Application and Software Related Services: The market for commercial application and custom application services would be driven by the growth in demand for application software, which is expected to grow positively as a result of increasing IT adoption, replacement / upgrading of legacy systems, reducing software license fees and acceptance of pay-per-use model of software licensing. Demand for applications would also lead to increased demand for software support.

HARDWARE

The total hardware market for the year is estimated to be around INR 32,500 crores, ac-

counting for almost 32 percent of the total IT market in India.

Personal Computers: Notebooks / tablets and desktops together comprise a major part of the IT hardware market. The market for notebooks / tablets is driven by the increasing demand for affordable, light weight, and portable computing devices.

However, the increasing demand for notebook / tablets will lead to a fall in the demand for desktop PCs. The slower growth of the desktop PC segment shall be driven by the increasing demand for computing devices in education and the ongoing Government initiatives to increase the reach of IT.

Network Equipment: Network equipment is another big revenue-generating segment in the overall hardware market. It is expected that increasing investments by companies in expanding and upgrading their current IT infrastructure would lead to increased investments in network equipment by most of the end-user industries.

Servers and Storage: Growing acceptance of cloud computing, virtualization and digitization is expected to drive the demand for servers and storage in future.

SOFTWARE PRODUCTS

The total software products market for the year 2011 is estimated to be around INR 17,800 crores, accounting for around 18 percent of the domestic IT market.

System Infrastructure Software: This segment primarily comprises of systems software, security software and system and network management software. The systems software market is more mature and developed. However, current technology and business trends such as adoption of disruptive technologies like cloud and mobility and growing business threats point toward a strong market potential for security software as well as system and network management software. Growing adoption of cloud computing and virtualization, with concerns for security and improved customer services, would drive companies to invest in these applications.

Application Development Software: The market for application development software is expected to grow at a healthy pace, primarily driven by the use of cloud leading to redefinition of methods of design, testing and deployment of applications as well as emerging mobile applications, systems and devices. However, leading providers will face some stiff competition from the growing presence of open-source software.

Application Software: Some of the key examples of application software include enterprise software, accounting software, office suites, and graphics software. The use of application software is increasing due to multiple factors including replacement / upgrading of legacy systems, increasing IT adoption across industries, reducing licensing fees, and increasing acceptance of pay-per-use model (software as a service) for software licensing.

Future Trends for IT Spends in India

The Indian IT market would grow on account of increasing acceptance of value creation through outsourcing, emergence and application of innovative technologies as well as IT adoption within relatively untapped segments of the market.

IN-HOUSE IT LIKELY TO MOVE TO OUT-SOURCED MODEL

In many cases, large Indian companies have actively managed their business processes and IT services in-house, ensuring that they have overall control over the processes. However, going forward, many of these companies are considering utilizing the services of third-party IT service providers, in order to lower the IT costs and ensure the availability of right quality of IT professionals, while managing the increasing complexity in IT requirements. This gives the IT service providers a big opportunity to offer their products and services to the domestic market.

SECOND WAVE OF INVESTMENTS FOR UPGRADES IN WELL-PENETRATED VERTICALS

Industries and players who have invested in developing IT systems to keep their businesses running, will now invest in new, more advanced technologies, allowing them to be-

come cost-effective and overcome profitability and growth constraints to gain competitive advantage. For example, banks and telecom companies have already invested heavily in building the basic IT systems. These players would now start allocating their IT spends towards adoption of new technologies to ensure better operational management, customer service, and cost-efficiency. Emerging technologies like cloud computing and big data analytics and innovative commercial models like outcome-based pricing will become the need of the hour.

IT ADOPTION IN THE NEXT TIER OF ENTERPRISES

With large companies running their business operations on complex IT systems, the next tier of companies will have to invest in upgrading their current IT systems to match the customer-service and profitability levels of larger players. The next tier of enterprises may not invest in developing complex IT systems internally, but may rather opt for new, cost-effective technological solutions from external vendors. This will lead to the emergence of standardized pay-per-use models to avoid heavy capital outlays by the next tier of companies.

NEXT WAVE OF TECHNOLOGY TO LEAPFROG IT EVOLUTION IN INDIA

Globally, IT has evolved gradually from main-frame in the 1970s' to client / server in the 1980's to Web 1.0 in the 1990s' to industrialization in the first decade of twenty first century. Companies are now developing strategies to accommodate the new age of digitization and mobility. However, while some industries in India such as banking and telecom have embraced IT completely and are almost at par with their global counterparts in IT adoption, most other industries have been late adopters of IT and are still in catching-up mode. Being late adopters, these Indian companies have the opportunity to use technologies that have already been tested by the early adopters, providing corporate India an opportunity to leap-frog into the advanced phase of IT evolution.

New technologies such as enterprise mobility, big data and data analytics, and cloud

computing are expected to change the way industry is adopting IT. These new technologies would enable Indian companies to provide best-in-class customer service and operate in a cost-effective and efficient manner. Big data and data analytics would empower the businesses to capture and analyze huge volumes of data, helping draw useful insights and unlock significant value through strategic decision making—something that is not possible using the traditional IT systems.

Over time, mobile phones have started playing a significant role in an organization's operations. Enterprise mobility enables employees to work together in an integrated manner, improving the efficiency and effectiveness of operations by using mobile technology. Adoption of these new technologies will empower businesses to gain competitive advantage by helping them develop superior IT capabilities.

Key Questions on Domestic IT Market

The Indian IT industry is at an inflection point in its evolution. The end-users will demand continued performance improvements to protect their profitability, new technologies to serve the next billion customers and innovative commercial models to make the offerings viable. The operating models of IT providers will have to evolve to be able to serve the changing needs of the end-users. Because of the inter-linkage between IT and the growth of the economy, the end-users and IT providers will have to collectively ensure effective leverage of IT in India. The

Government will play an important role both as a buyer and a facilitator in enabling IT adoption.

The following questions emerge to understand how IT adoption at Indian companies can increase:

- What are the requirements of end-user industries? How are they evolving?
- What are the IT providers doing to target the domestic market?
- What would be the role of the Government in enabling IT adoption in India?
- What actions should all stakeholders—end-user industries, IT providers, and the Government—take to effectively leverage IT for India's growth?

We will explore these questions in detail in the chapters that follow.

NOTE:

1. Population projections 2001–2026, Teamlease India labour Report 2006, BCG analysis.
2. BCG Centre for Consumer Insight report, “Taming the Tiger: Understanding the Indian Consumer Opportunity”.
3. EIU, BCG analysis.
4. UNDP population forecast; BCG analysis.
5. BCG report, “The Internet Economy in the G–20: The US\$ 4.2 Trillion Opportunity”.
6. Thomson One Banker, Capital Line.
7. EIU, Gartner.
8. EIU.

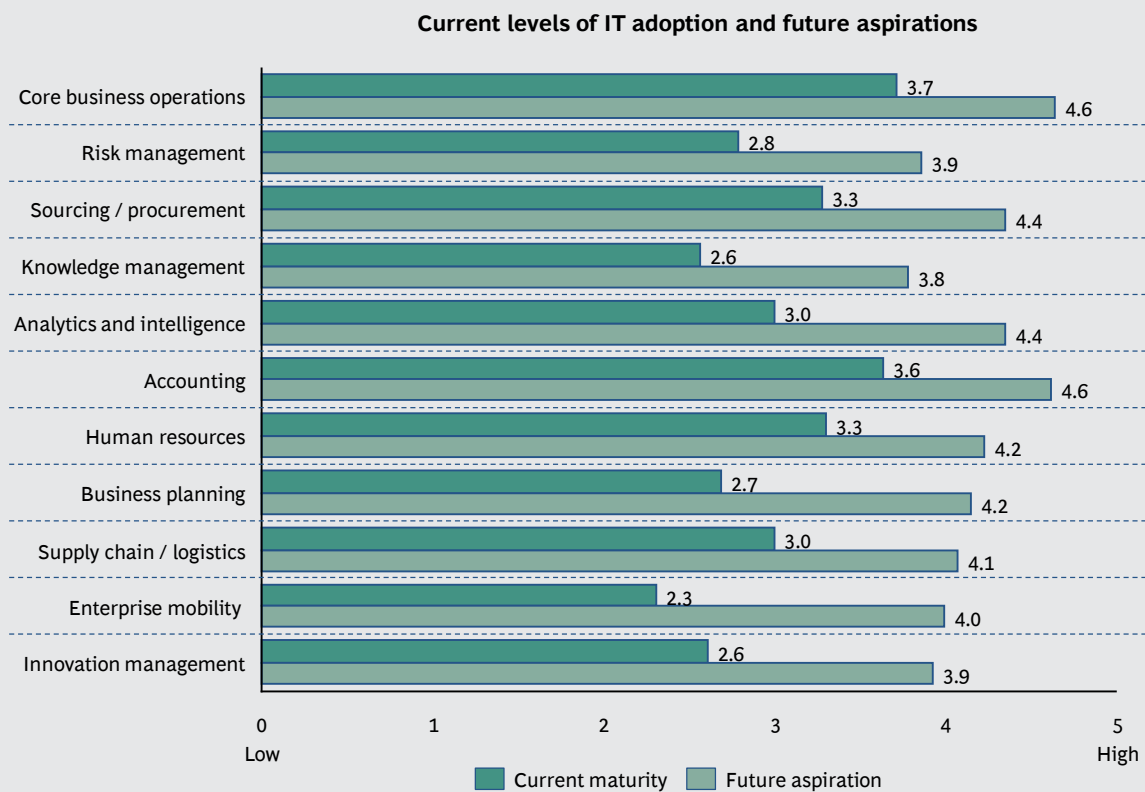
END USER PERSPECTIVE

Evolving Role of IT in Indian Companies

IT spends in India are significantly lower than other peer countries—Indian companies typically have a lower level of IT adoption than

their global competitors. It is, therefore, no surprise that the CII–BCG IT End User Survey 2013 revealed that Indian companies are planning to increase their IT adoption across business functions (as shown in Exhibit 2.1).

EXHIBIT 2.1 | IT adoption varies across different business functions



Source: CII–BCG IT End User Survey 2013.

Note: Responses on a scale of 1 to 5; 1—lowest, 5—highest.

In light of the increasing IT adoption, the value proposition of IT is evolving from an order taker to being a business partner. Traditionally, the role of IT has been that of an “order taker”, focusing on providing the basic IT infrastructure and applications to keep the business running. IT teams have primarily helped the organizations optimize their operating and capital expenditures, providing solutions to satisfy business requirements. However, as companies increasingly accept IT as a solution to business problems, they will make a conscious effort to integrate IT with their operations, and expand its scope and use in business processes and customer offerings. Further, the alignment of IT with business is becoming increasingly critical to optimize IT investments and ensure usage where business impact can be substantial. IT, with its unique vantage point of being connected with all business units and functional areas, is now being called upon to play a key role in driving business innovation and developing new business models. Exhibit 2.2 lays out the evolving role and scope of IT within organizations.

The increasing importance of IT in business will also transform the role of companies’ internal IT teams, who would need to evolve

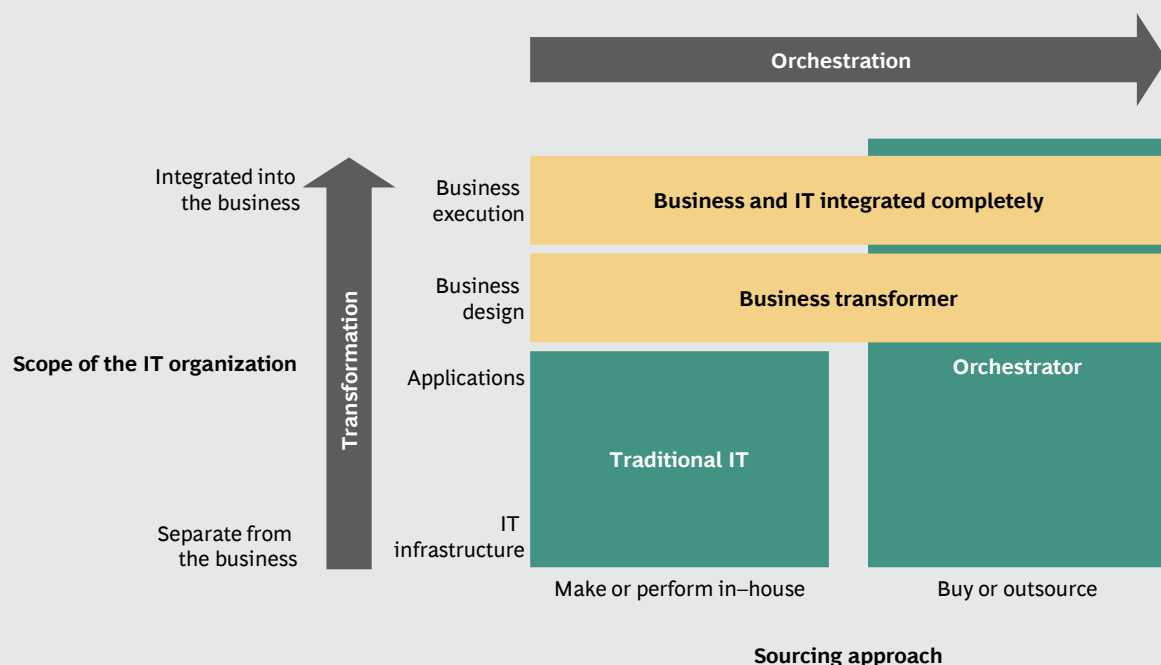
from their current role of “doers” to “orchestrators”. Companies are increasingly outsourcing traditional IT activities such as development of applications and management of networks and helpdesks. Internal IT teams of companies, therefore, need to focus on more strategic aspects such as understanding business requirements and proposing appropriate IT solutions and developing the target architecture. Supplier selection and negotiations, in a complex landscape of solutions and providers, will demand professional procurement techniques that have historically been used by corporate procurement specialists.

Organizations are increasingly looking at IT to transform their business—automating processes for faster speed and reduced costs, facilitating smooth interactions between parties and helping them manage increasingly large quantities of data to create a competitive advantage in their industries (as shown in Exhibit 2.3).

IT Capability Maturity of Indian Companies

Indian companies, owing to their low levels of IT adoption, have not dedicated sufficient efforts to

EXHIBIT 2.2 | Evolving role and scope of IT within organizations



Source: BCG analysis.

EXHIBIT 2.3 | Select examples from Indian companies on how IT can be leveraged to transform businesses

	Automotive industry	Securities industry	Healthcare industry
IT solution and description	Dealer management system	Smart order routing	Hospital information system
Purpose of IT solution	• Single platform for all dealers • Direct, real-time and predictable information channel with dealers	• Identification of stock exchange to execute transaction based on price, cost, speed and other factors specified by clients	• Capturing of complete cycle of care of patients from entry to exit and services provided post release from hospital
Impact	Better customer and dealer experience • Standardize the dealership network • Ability to predict sales & service trends • Better customer understanding	Quick order execution at best prices • Automated trading facility for customers to monitor order books of multiple exchanges and execute trades at best prices quickly	Improved patient care • Better diagnosis and treatment of patients • Data capturing of consumables and other items on daily basis to reduce wastages

Source: Discussion with industry participants; BCG analysis.

develop their internal IT capabilities. As a result, IT management capabilities in Indian organizations are found to be significantly lower than the desired levels. All respondents to the CII-BCG IT End User Survey 2013 expressed a desire to enhance their IT capability levels across multiple dimensions (as shown in Exhibit 2.4).

IT NOT SEEN AS BUSINESS CHANGE DRIVER

Most Indian companies have traditionally shied away from leveraging IT as a tool to achieve business goals. While most of them use IT, a significant proportion of them still struggle to identify the potential opportunities offered by IT solutions. This leads to low priority for IT in business planning. An inability to envisage IT as a driver of business change has meant that Indian companies find it difficult to proactively identify IT requirements across various functions. As a result, the implementation and upgrades of IT solutions is delayed further, resulting in potential business losses.

CALCULATION OF RETURN ON INVESTMENT

The existing capabilities of a majority of Indian companies limit them from calculating the effective return on investment on IT systems

and solutions. Businesses are unable to accurately calculate the accrued benefits from IT implementation, giving rise to a perception that the potential envisaged at the time of planning has not been fully delivered.

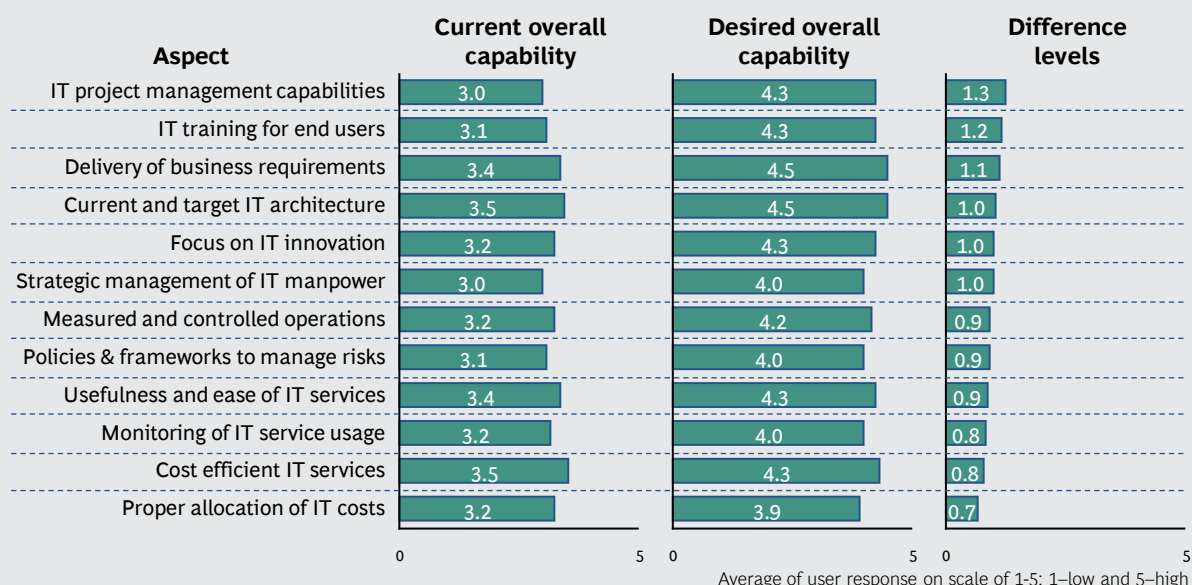
VENDOR MANAGEMENT

Once the IT requirements are laid out, the next key factor that determines the success or failure of an IT project is the ability to select the right vendor and work with them to implement the project successfully. This makes vendor management a crucial aspect in IT implementation, especially in a scenario where companies are opting for multiple vendors. While some Indian companies have developed advanced capabilities and processes for end-to-end vendor management, many of them currently lack these (as shown in Exhibit 2.5)¹. The absence of defined processes and parameters for vendor selection, management and performance monitoring leads to ineffective and inefficient IT implementation.

GOVERNANCE MODELS

Leveraging IT to achieve business goals is still a relatively new concept in India. As a conse-

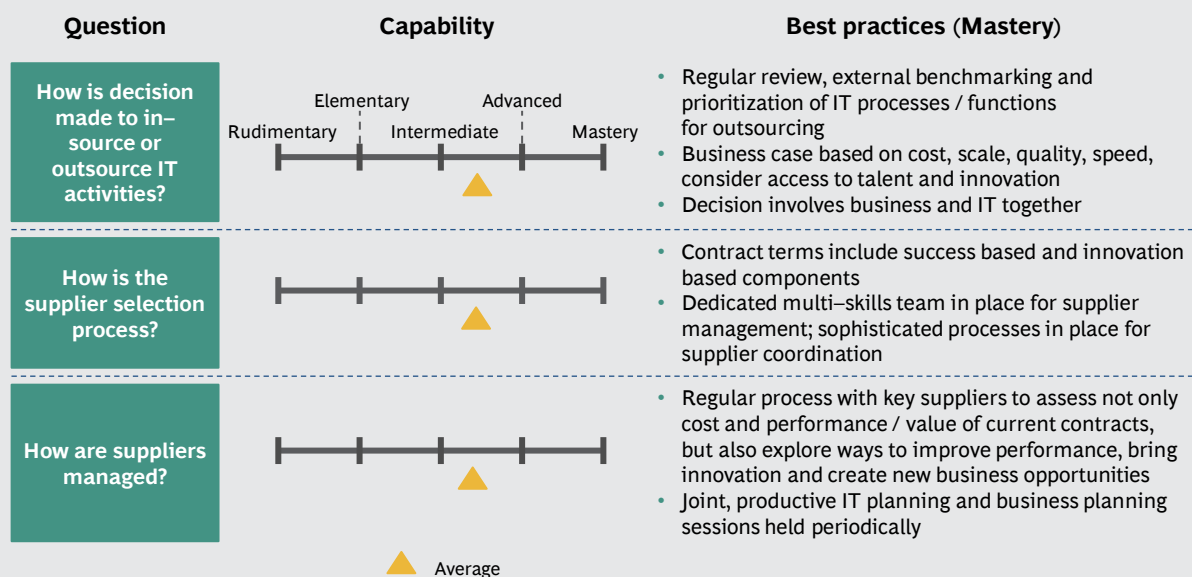
EXHIBIT 2.4 | End users are weak in managing IT effectively and strategically to create value



Source: CII–BCG IT End User Survey 2013; BCG analysis.

Note: The rating scale is defined as follows: 1 being “Rudimentary”: Outcome not measured; <20% degree of automation; ad hoc defined process; reach in pockets of IT, 2 being “Elementary”: IT outcome measured; <40% degree of automation; disciplined process; reach across all IT functions, 3 being “Intermediate”: outcome measured and controlled; <60% degree of automation; standard, consistent process defined; reach across business and IT, 4 being “Advanced”: Business and IT outcome measured; <80% degree of automation; predictable process; reach across business and IT incl. subsidiaries, 5 being “Mastery”: Business and IT outcome measured and controlled; up to 100% degree of automation; continuously improving process; reach across business, IT, subsidiaries, and external business partners.

EXHIBIT 2.5 | End user maturity on IT sourcing capabilities



Source: CII–BCG IT End User Survey 2013; BCG analysis.

quence, many Indian companies do not have well-defined IT governance models. Decision making tends to be on a case-by-case basis, and companies find it difficult to manage IT with consistency and transparency. Companies are still evolving their internal governance mechanisms to optimize the role and decision making effectiveness of different business units, as well as the role of business in IT decisions.

TALENT MANAGEMENT

Indian companies are finding it challenging to hire and retain top IT talent amid tough competition from IT providers who offer recruits foreign postings with attractive remuneration. Additionally, Indian companies have not invested in developing their in-house IT teams as much as they should have. In most companies, talent planning and talent management processes are inadequate; career paths are unclear at best. This has an adverse impact on the quality of internal IT personnel, prompting the end user industries to tap IT providers for filling the gap.

Challenges for IT Adoption at Indian Companies

END USER NEEDS ARE DIFFERENT

In India, workforce is available at relatively lower costs, making it challenging for IT providers to pitch the effectiveness of their solutions purely based on the cost advantage. IT providers, therefore, need to identify alternative value propositions for the domestic market. Process optimization and business transformation are what Indian companies need, and many times this can be challenging to provide at the price levels they demand.

The user needs are also evident in the dimensions that Indian companies lay greater stress on while selecting vendors. Vendors' alignment to business needs and reliability of services are top priority, followed by domain expertise and performance guarantees (as shown in Exhibit 2.6)¹. IT providers thus, need to invest resources in understanding the user needs and ensure that their proposed solutions are in close alignment with them.

INDIAN COMPANIES ARE LATE ADOPTERS OF IT

Indian companies, being late adopters of IT, do not have historical investments in build-

ing IT capabilities for their businesses. As a result, companies start from a very low baseline of IT management capabilities and infrastructure, in contrast with their counterparts in developed countries who have an established basic infrastructure. IT providers, thus, need to play an end-to-end role where they partner with clients to help adopt IT, build IT systems from scratch, and implement transformative business processes, all at the same time.

INDIAN COMPANIES ARE COST SENSITIVE

Several Indian companies still consider IT as a cost center, and not a driver for value addition and business growth. In order to control costs, companies tend to resort to hard negotiations, prefer integrated deals and press for outcome-based pricing models. Due to this mindset, companies may eventually compromise on some key aspects of the implementation, to be able to accommodate costs within the allocated budget. For IT providers, this cost consciousness translates into lower margins in India compared with the global market.

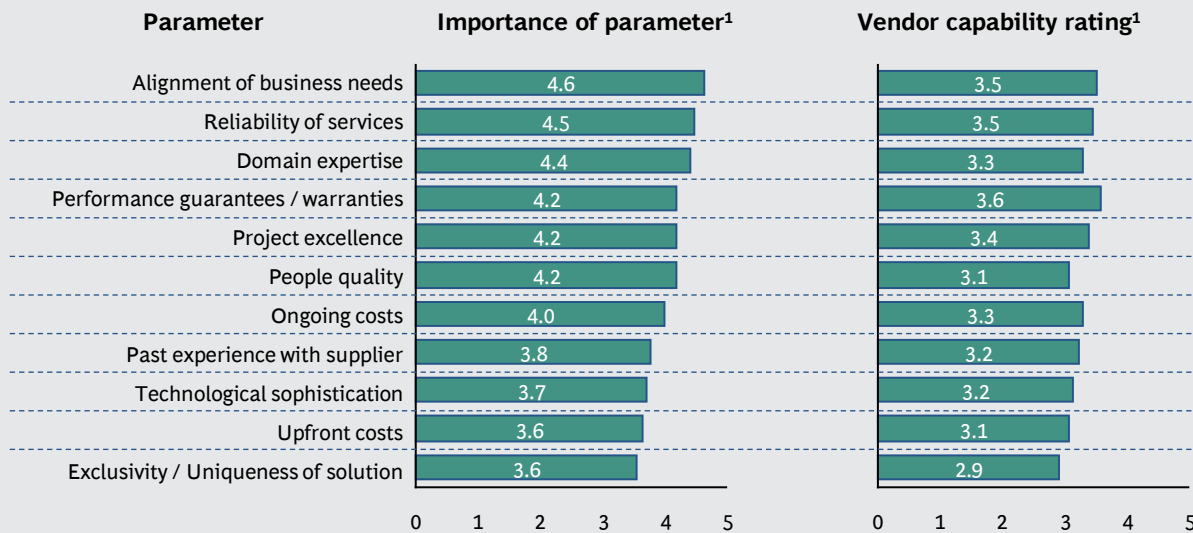
CLIENT RELATIONSHIP MANAGEMENT IS IMPORTANT

The pattern of IT buying by Indian companies differs significantly from that observed in other countries. Given the relatively inadequate internal capabilities, Indian companies are typically "high touch clients" and prefer more hand holding from their vendors. They expect the providers to become business partners who will make up for the lack of internal IT capabilities. IT providers, thus, need to possess strong account management capabilities with dedicated resources to be able to serve Indian clients effectively.

EXPECTATION OF HIGH QUALITY OF DELIVERY

While Indian companies are late adopters of IT and cost sensitive, they are quite discerning as buyers, demanding the same quality of delivery as promised by IT providers to foreign clients. They expect vendors to assign quality resources for their projects, as well as ensure delivery on key aspects like cost, schedule, and quality of service. Put simply, there is a gap between the end user companies' expectations in terms of delivery quality

EXHIBIT 2.6 | End users take multiple factors into consideration for vendor selection, some more important than others



Source: CII-BCG IT End User Survey 2013, BCG analysis.

¹Responses on a scale of 1 to 5—1 being the lowest, 5 being highest

and the current approach adopted by IT providers. IT providers thus, need to balance the expectation of high quality delivery with the price points demanded in the Indian market.

De-averaging IT Adoption across Industries

The level of IT adoption in India varies across different sectors. The top four sectors—banking, Government, manufacturing, and telecom account for more than 60 percent of total IT spends in the country (as shown in Exhibit 2.7).

As illustrated in Exhibit 2.8, IT intensive sectors, like banking, telecom, and insurance, are spending a larger share of their revenues towards IT. These sectors have adopted IT across their entire suite of business functions, including the back-end organizational processes, customer facing activities and revenue generating initiatives, and are at an advanced stage in IT adoption. The Government is also a big spender, due to its focus on developing the basic IT infrastructure and recent developments in providing better citizen services.

Emerging sectors like education, healthcare, media, and retail are relatively low IT spend-

ers currently, but are expected to significantly increase their expenditure on this front in the future. These sectors have the potential to witness high growth driven by increased IT adoption across their business functions and would constitute the next tier of opportunity.

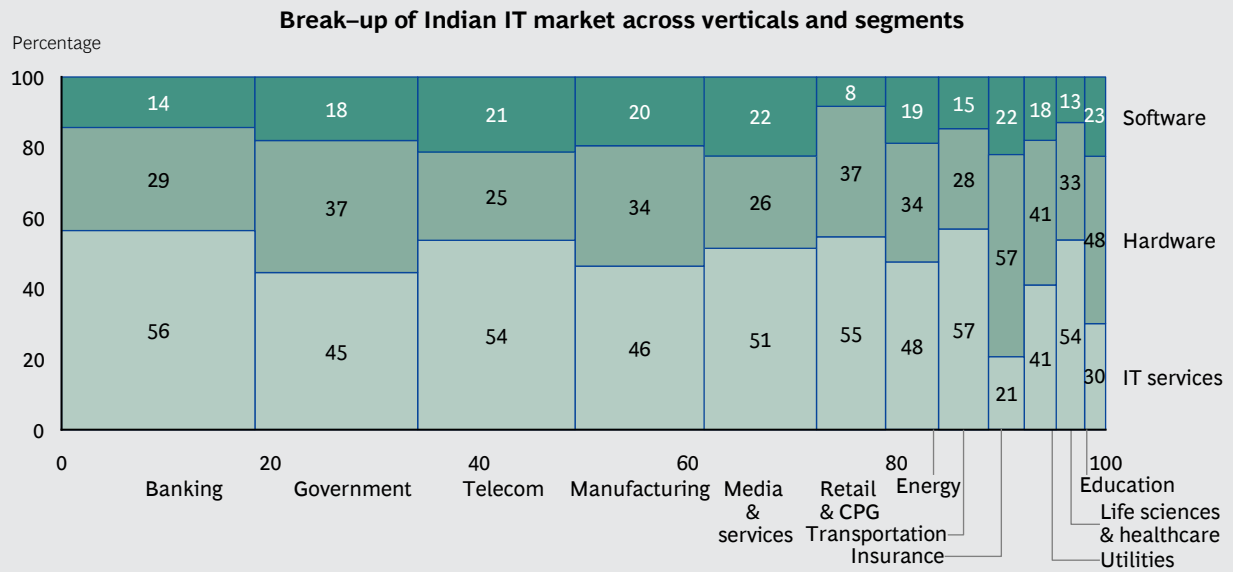
The industry sectors differ from each other in terms of their level of IT adoption, the role IT plays in the business and the drivers for IT investments. It is important to understand these differences to be able to leverage IT effectively in each sector. Exhibit 2.9 gives a snapshot of IT adoption and the role of IT across some major sectors. We will now delve into each of these industries in detail.

Industry Deep Dive: Banking

BANKING SECTOR: AN OVERVIEW

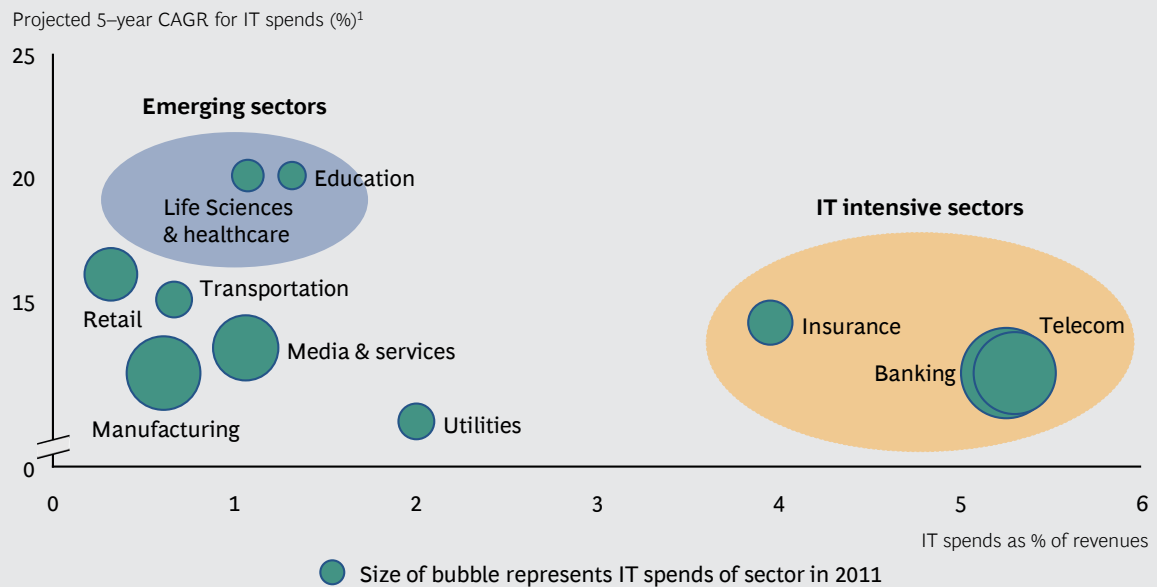
The Indian banking sector plays a crucial role in the development of the domestic economy. Bank deposits—a significant driver of economic growth—stood at 73 percent of GDP in 2011, up from 57 percent of GDP in 2005². Banking assets are growing at 18 percent per annum, while the profits are growing faster at 23 percent³. This has been primarily driven

EXHIBIT 2.7 | Snapshot of Indian IT market in 2011



Sources: BCG analysis; Gartner.

EXHIBIT 2.8 | Current IT spending patterns and future IT spends varies across different sectors



Sources: Gartner; Expert interviews; BCG experience; Research reports; BCG analysis.

¹Projected CAGR for the period of 2011–2016.

EXHIBIT 2.9 | Industry verticals differ on various dimensions of IT adoption

Segment	Extent of IT adoption						
	Telecom	Banking	Insurance	Manufacturing	MPE	Retail and CPG	Healthcare
Areas of IT adoption	Customer facing processes, Business processes, New products using technology	Customer facing processes, Business processes, New products using technology	Customer facing processes, Business processes	Business processes, Support functions, Cost reduction	New products using technology, Business processes	Customer facing processes, Business processes, Cost reduction	Customer facing processes, Business processes
Key drivers of IT investments	Differentiated customer offerings Regulatory compliances Business operations	Regulatory compliances Differentiated customer service Financial inclusion	Regulatory compliances Differentiated customer service	Operational efficiencies Return on investments	Differentiated customer service	Multi-channel retail Differentiated customer service	Information management Reach expansion
Dominant type of contracts	Large total outsourcing deals	Piece-meal, few large contracts	Piece-meal, few large contracts	Piece-meal contracts	Piece-meal contracts	Piece-meal contracts	Piece-meal contracts

Source: Discussion with industry participants.

by the outstanding growth in key business lines such as retail and commercial lending.

The banking sector comprises 26 Government-controlled banks, 20 private-sector banks, 40 foreign banks and more than 2,600 cooperative banks. Additionally, there are over 13,000 NBFCs established in India. The top ten banks, seven of which are controlled by the Government⁴, control over 50 percent of the total deposits and loans.

CURRENT IT ADOPTION AND BUYING BEHAVIOR

For banks, a large part of their IT investments in the last few years has gone toward rolling out core-banking solutions. But now, investments in deployment of other applications, outsourcing of infrastructure and processes have picked up.

New private banks and foreign banks have adopted IT the most, followed by nationalized banks and the old private sector banks. New Indian private banks and foreign banks extensively use applications, provide facilities such

as unified customer information and branch-less banking, and have developed alternate channels of banking. However, nationalized and old private sector banks have used applications across their systems in a limited manner, and not focused heavily on improving customer service and developing alternate banking channels. Unlike most of their peers, old private-sector banks are yet to significantly outsource select business processes and the management of their IT infrastructure.

As far as adoption of new technologies like cloud computing and data analytics is concerned, new Indian private banks and foreign banks have been quite keen, and have started making efforts to leverage the advantages of such technologies. In contrast, nationalized banks and old private sector banks are yet to make headway in this area.

BUSINESS TRENDS DRIVING IT ADOPTION

The Indian banking sector is expected to witness strong growth in the coming years, primarily driven by the huge pool of potential customers, favorable demographics, increas-

BANKING VERTICAL: DEEP DIVE

Sectoral overview

- Indian banking sector growing at around 18 percent
- Four types of banks—public sector, old private sector, new private sector and foreign banks

Current IT adoption

- INR 18,500 crores IT spends in banking
- National private banks & foreign banks leading IT adoption followed by nationalized and old private banks

Business trends driving IT adoption

- Focus on retail banking
- Increasing bank footprint—new branches and ATM roll outs
- Pressure on margins that will require innovative technologies to reduce cost
- Financial inclusion which will require solutions to cater to low ticket-size customers

Key areas of opportunity

- Customer relationship management
- Back-end management
- Data warehousing
- E-payments and mobile banking
- Payment systems
- Outsourcing of ATMs
- Solutions to cater to RBI regulations

ing household incomes, and an increasing focus on semi-urban and rural areas.

Some of the key trends that will shape the future of Indian banking are:

Focus on retail banking: Rapid accumulation of wealth in households and emergence of the “next billion” consumer segment would drive growth in retail banking, both for high net worth individuals, as well as, for the emerging middle class.

Increasing banking footprint: Banks will have to expand their networks extensively by setting up branches and ATMs. The industry will follow the model of low-cost branch network, involving smaller sized branches.

Lower margins: The sector would face downward pressure on margins in retail as well as

corporate banking. Banks will invest in innovative technologies to improve efficiency and lower costs.

Financial inclusion: Financial inclusion, which requires banks to come up with innovative solutions to cater to low ticket-size customers, is a central item on the Government’s agenda. The Ministry of Finance has mandated public sector banks to focus on financial inclusion. At the same time, private banks have also started focussing on this. The current business models are not economically viable, and new models such as the business correspondent approach will have to be radically different in terms of distribution, technology, HR practices, and risk management.

KEY AREAS OF OPPORTUNITY

IT will play a critical role in the growth of the banking sector. The larger banks have suc-

successfully implemented the basic IT infrastructure required to run their operations, and the next tier is also moving toward greater IT adoption through increased outsourcing of its IT functions. Larger investments would be needed to upgrade existing systems and develop new ones to meet the growing and ever-changing business requirements.

Customer relationship management: Banks would invest in developing IT solutions to adapt to the increasing needs of their customers, and to manage client relationships effectively. Some of the steps banks are expected to take include:

- Develop superior capabilities in data analytics to develop customer insights, improve customer services, and identify potential cross-selling opportunities
- Identify innovative means of targeting customers, such as social media and digitization
- Target growth in automated, standardized products to reduce lead time, and allow effective selling of low-risk products

Back-end management: Banks are expected to spend on upgrading their IT systems to make their internal processes efficient and cost-effective. Future IT spends will include:

- Use of cloud computing to improve efficiency, reduce costs, and scale up operations without incurring additional expenses on hardware, software, and manpower
- Implementation of tools for better HR management, especially in PSU banks
- Migration to paperless transactions & processing, such as cheque truncation system
- Increased investments in areas such as automated data flow, data storage as per KYC norms and document management, to ensure compliance with regulations

Data warehousing: To manage the growing volume of business transactions, banks would

increasingly spend on data warehousing that can enable efficient decision making by providing a repository of historical data through systematic design. This would require a vast suite of applications, giving rise to multiple opportunities for IT providers.

E-payments and mobile banking: For the next generation of tech-savvy customers, mobile is emerging as the preferred medium of conducting banking transactions. Private banks are developing capabilities to provide mobile banking services to their customers. Nationalized banks, too, are starting to adopt this technology. Going forward, banks will invest in development of systems and applications that will cater to the demand for such services from the new breed of technology-friendly customers, helping banks to build lasting client relationships.

Payment systems: An increasing portfolio of products across delivery channels, and coupled with newer methods of making payments, would require banks to invest in development of new payment systems to ensure protection of customer funds and internal security.

ATM outsourcing: Another major opportunity for IT providers lies in the ATM space. The rollout of ATMs is on the rise to cater to the population in tier 2 and tier 3 cities. There is an increasing trend towards outsourcing of ATM management, with many banks embracing total outsourcing models, which encompasses management of installation, ATM services as well as assets.

Regulations: One of the important drivers of IT spending by banks will be the guidelines put forth by the RBI that pertain to the use of IT. Automated data flow, the subject of the central bank's approach paper released in November 2012, is a case in point. The RBI's other guidelines for banks include greater use of technology with regard to upgrades in RRBs, KYC norms, and the cheque truncation system.

Industry Deep Dive: Telecom

TELECOM SECTOR: AN OVERVIEW

India is one of the fastest growing telecom markets in the world. The introduction of mobile telephony services has changed the tele-

com landscape completely in the last decade. The number of mobile connections has grown by about 40 percent per annum over the last five years, standing at over 935 million in October 2012⁵. High mobile penetration is playing a key role in bringing about socio-economic inclusion by connecting people across the country.

The wireless services market is dominated by a few private-sector players whereas the fixed line segment is dominated by the Government-owned BSNL.

CURRENT IT ADOPTION AND BUYING BEHAVIOR

Being a technology-driven sector, telecom has seen high IT usage. Industry players spend on all aspects of IT—be it applications, infrastructure, or outsourcing of business processes. The telecom sector in India has the highest IT penetration.

IT has application across the organization in a telecom company. On the front end, IT systems as well as BPO, play an important role in selling, order processing, billing and collections, customer service, and marketing. On the back-end, companies invest heavily in IT infrastructure, maintenance and security. In addition, firm-wide ERP and support functions like HR payroll and finance accounting also use IT.

For the technology-intensive telecom sector, managing IT is a core business activity. The sector, both worldwide and in India, has been characterized by strategic outsourcing deals that help reduce management burden while empowering them to decide on their IT systems. These contracts aim to ensure a stronger alignment between the vendor and the telecom provider through sharing of costs and revenues to varying degrees. The Airtel-IBM and Aircel-Wipro deals are examples of such contracts.

TELECOM VERTICAL: DEEP DIVE

Sectoral overview

- Shift in key metrics: Subscriber retention over acquisition and MoU and RPM over ARPU
- Retail saturated, growth to be driven by enterprise
- Profitability dependent on scale; consolidation imminent

Current IT adoption

- INR 15,000 crores IT spends in telecom
- High level of IT adoption—multiple applications, infrastructure and business process outsourcing common
- Large strategic outsourcing deals the norm in telecom

Business trends driving IT adoption

- Greater focus on customer retention
- Need to increase ARPUs, particularly from high value customers
- Growth of the enterprise segment
- Consolidation in the industry

Key areas of opportunity

- Need for analytical tools to capture usage trends as well as those tracking service levels
- Enterprise solutions catering to the needs of the large, mid-sized companies as well as the SMBs

BUSINESS TRENDS DRIVING IT ADOPTION

Greater focus on customer retention: Given the already high tele-density levels, the subscriber base is starting to flatten out, particularly in urban areas. In addition, the implementation of mobile number portability has made it easy for consumers to switch providers. This has prompted telecom companies to increasingly focus on retaining customers, by ensuring quality of service and providing a host of value-add services.

Need to increase Average Revenue Per User (ARPU): The Indian telecom space has seen tariffs drop precipitously, owing to the intense competition among providers. This has led to a fall in ARPU. One of the thrust areas for providers is to find ways to increase the revenue realization from each user. The emerging trend of a rise in use of data, compared with voice, can be a driver. However, this will require a better understanding of consumer needs, and provision of appropriate solutions.

Growth of enterprise segment: The rapidly growing enterprise segment in India is a major driver of growth for the industry. Many providers are already taking steps to tap this opportunity, with some providers having started offering cloud-based services for their corporate clients. The sector will need to beef up its services—cloud, mobility, storage services and security systems—for the enterprise segment.

Consolidation in the industry: Since telecom is a capital-intensive industry, scale becomes important. Given the high level of competition and declining ARPUs, many smaller players are facing pressure on their margins. Consolidation could be a possibility, and could have a bearing on the use of IT. In the short-term there will be IT system integration projects but over the longer term IT buying will become more consolidated.

KEY AREAS OF OPPORTUNITY

Data analytics: Analytics tools will help capture customer usage trends, and identify high-value users, thus enabling telecom providers to extract maximum value out of such customers, by providing them with the right set of services. Analytics will also be helpful

in analyzing network failures, and hence improving service levels.

Enterprise solutions: As providers target enterprises, they will need to build the suite of products and solutions, such as M2M (Machine to Machine) applications, sought by corporate customers and SMEs.

In addition, providers will keep investing in technologies that improve customer experience and provide users with more services.

Integrated deals will continue to dominate the telecom sector. The incumbency effect will be significant, with existing providers winning a larger share of the pie in deal renewals. However, current deals may be split during renewals leading to a potential entry point for new players.

Industry Deep Dive: Manufacturing

MANUFACTURING SECTOR: AN OVERVIEW

The manufacturing sector plays an important role in the Indian economy, both as a significant contributor to GDP, as well as a source of employment to a large section of the Indian population. However, compared with other major economies, manufacturing is a relatively smaller sector in India. For India, value added by manufacturing sector as a percent of GDP has been around 15 percent over the last few years, as compared to the nearly 30 percent level recorded in China and South Korea⁶. The manufacturing sector has been a laggard for the economy, growing at less than 7 percent per annum over the last five years—compared with the 7.6 percent rate of GDP expansion⁷ in the same period. This can be attributed to a number of challenges faced by the sector, such as poor infrastructure, policy coordination, labour issues, as well as lower levels of technology penetration.

Consisting largely of medium and small-sized enterprises, the Indian manufacturing sector is highly fragmented. It is estimated that SMEs account for 45 percent⁸ of industrial output. The rest comes from either the large companies (domestic companies and MNCs operating in India) or the micro enterprises spread all across the country. A large part of

MANUFACTURING VERTICAL: DEEP DIVE

Sectoral overview

- Manufacturing GDP is INR 820,000 crores for 2011 with growth slowing down in the last few years
- Sectors like automotive, electrical machinery have seen high growth whereas others like textile and basic metals are lagging

Current IT adoption

- INR 12,300 crores IT spends in manufacturing, IT adoption levels still low
- IT service deals typically small, mostly around infrastructure outsourcing and application development

Business trends driving IT adoption

- Operational improvements
- Cost optimization to bring down cost of operation in the face of increasing competition
- Government initiatives promoting the use of IT—steps being taken to promote technology adoption in certain verticals as well as schemes to help SMEs adopt IT

Key areas of opportunity

- Value-adding industry specific applications for process improvements and performance enhancement
- Greater infrastructure outsourcing by larger companies
- Low cost solutions and delivery model for MSMEs including use of cloud

the MSMEs are present in clusters spread across the country.

CURRENT IT ADOPTION AND BUYING BEHAVIOR

On an aggregate level, the larger companies have higher adoption of IT, as compared with smaller businesses. The current IT needs and buying behavior are summarized below:

- *Large enterprises:* This segment can be divided into two parts—late adopters of IT (old set-ups with greater dependence on legacy systems) and the early adopters. While the former are focusing largely on having the basic systems upgraded, the latter are looking at enhancing their operations through greater application of IT over and above the standard ERP and CRM solutions. In terms of the need for IT,

however, both of them are similar, but have varied priorities due to the different starting points. Most of the IT purchase is based on smaller contracts and large outsourcing deals, like in telecom, are non-existent in this sector

- *Mid-size companies:* This segment is similar to the larger enterprises, as far as IT adoption is concerned. However, due to their lower geographic spread and smaller scale (as compared with bigger businesses), the need of mid-sized enterprises for IT infrastructure is intrinsically lower
- *SMEs:* This segment accounts for about 45 percent of the country's total manufacturing output, but does not spend much on IT. They tend to use IT only for the most critical applications, based on the respec-

tive industries they operate in. Most of them do not have a complete ERP implementation in place, and tend to use only the parts of it that are most critical to their functioning. Being cost sensitive, SMEs prefer to use the cheaper local versions of ERP software. The buying, therefore, is largely through local vendors

- *Micro-enterprises:* The smallest of the companies use IT primarily for document processing and management

The level of IT adoption is also a function of the nature of the sub-sector. Automotive and pharmaceutical companies typically show advanced adoption rates, unlike textile companies which have a lower need for IT. For example, the IT system in automotive companies needs to be linked to those of their vendors (ancillaries) so that just-in-time delivery can be ensured. Many process industries like chemicals, cement, etc. are at the intermediate level of adoption, requiring greater stress on a supply chain management than on other processes.

Most manufacturers are price-sensitive, and hence have typically not spent much on IT. Most companies in this sector spend less than a percent of their revenues on IT.

BUSINESS TRENDS DRIVING IT ADOPTION

- *Operational improvements:* Indian manufacturing companies are facing challenges from foreign players that are setting up shops in the country, as well as from new domestic players arriving on the scene. In the face of this competition, it is important for industry players to move toward better and more efficient processes, and to bring about these changes, greater use of technology is inevitable
- *Cost optimization:* In the light of the recent slump in demand, as well as the massive influx of cheaper products from other low-cost countries, Indian companies are actively looking at ways to reduce their operational costs and discretionary spending.
- *Government initiatives promoting use of technology:* The Government is taking steps

to make the sector more competitive by setting up the NMCC (National Manufacturing Competitiveness Council). It has also taken specific steps to give a fillip to the use of technology in this sector

- Reducing duties or providing subsidies for technology upgrades in pharmaceutical, textile and food processing companies
- Introducing schemes for technology development in MSMEs, sensitizing SMEs to IT and emerging trends like cloud

KEY AREAS OF OPPORTUNITY

Low-cost solutions and delivery for MSMEs:

Considering that this is a highly price-sensitive segment, cloud-based solutions—for both applications as well as infrastructure—could well be the answer to cater to the needs of MSMEs. Shared applications and infrastructure will provide them access to the IT at affordable rates. Subscription-based deployment models (SaaS—Software as a Service) for various applications, including ERP, could be the way forward for MSMEs. For example, a manufacturer of self-adhesive tapes, with an annual turnover of less than INR 10 crore, adopted a cloud-based entry-level ERP / CRM solution to address budget constraints. This helped them increase productivity, shorten sales cycle and improve decision making due to greater visibility and insight.

Greater infrastructure outsourcing by larger companies: A large number of the bigger enterprises still manage their IT in-house. As they look for cheaper alternatives, many of them, particularly those with higher IT adoption and multiple locations, will find it cheaper to outsource their IT infrastructure. Cloud could also be a potential area of investment. Hero MotoCorp, for example, has put its entire dealer management system on the cloud. However, this is still not a top-of-mind agenda for many CIOs in this space.

Value-adding industry-specific software: For companies that have a relatively higher level of IT adoption, the next wave of investments will be in applications geared toward process improvements and performance enhance-

ment. Industry-specific applications that are built on existing ERP and CRM will drive IT spending in this segment.

for this industry is advertising spends, which continue to grow amid rising consumerism—to the benefit of media and publishing companies.

Industry Deep Dive: Media, Publishing, and Entertainment

MEDIA, PUBLISHING AND ENTERTAINMENT SECTOR: AN OVERVIEW

The overall size of this industry is in excess of INR 70,000 crores⁹. Television and print media are the largest segments, accounting for around 70 percent of the industry's revenues⁹. Smaller segments such as animation and visual effects, digital advertising, and gaming are seeing much higher growth rates, as compared with conventional segments like TV, print, and radio. The major source of revenue

CURRENT IT ADOPTION AND BUYING BEHAVIOR

The level of IT adoption varies across the value chain. In televisions and films, for example, the role of IT is larger in broadcasting and distribution, as compared to production. For production and content creation, most of the IT usage revolves around packaged software for movie editing, animation, and graphics. Broadcasting requires the broadcast management system and some custom applications built around the same. Distribution and marketing use the conventional

MEDIA, PUBLISHING & ENTERTAINMENT: DEEP DIVE

Sectoral overview

- The M&E sector is INR 700 billion in revenues and expected to grow at 15 percent per annum till 2016
- TV is the largest medium followed by print; 40% of industry revenues come from advertisements

Current IT adoption

- INR 10,700 crores estimated to be spent on IT by the media, publishing and entertainment industry
- Most of the larger players outsource infrastructure; spending on content digitization is high in, broadcast management is critical for television

Business trends driving IT adoption

- Proliferation of digital media leading to digitization of content and delivery of digital content; new services like pay-per-view and video-on-demand
- Need to increase ARPU as competition rises
- Deeper market research for better planning of content and its positioning including leveraging the same in advertisements and promotion

Key areas of opportunity

- Analytics and business intelligence for targeted marketing, dynamic pricing and market research to use viewer feedback
- Increased need for social media and mobile based applications to increase reach and revenues

CRM solutions. By virtue of their nature of work, both broadcasting and distribution are technology intensive, and hence IT spends are higher for these activities. IT is used also in support functions, and is now gaining ground in market research and analytics. In comparison, the print and publishing industry is a smaller user of IT.

The buying behavior is largely multi-vendor, based on small contracts, and not large deals. The extent of outsourcing of IT functions is low in this sector, and is limited to specific areas.

BUSINESS TRENDS DRIVING IT ADOPTION AND KEY AREAS OF OPPORTUNITY

Proliferation of digital media: The focus on greater use of digital media will continue to be an important trend in this industry. Digitization of content, as well as delivery of digital content, will remain a focus area for businesses, with IT playing the role of a major enabler. This is also paving the way for new services like pay-per-view and video-on-demand. The role of social media is also set to rise, with it developing into an important channel for marketing as well as content delivery.

Need to increase ARPUs: Advertising is the largest source of revenue for the industry today. As competition increases, it will be critical for companies to boost per-user revenue—either through existing means or from alternate sources. Content sales on social media and on mobiles could emerge as alternatives, which will require greater use of IT.

Market research for better planning: Better market research and analytics are increasingly becoming important for content creators, who need to get a pulse of what viewers want. These aspects are also vital for better planning of advertisement positioning by marketers and hence increasing revenue realization from the same. Thus, the requirement for better consumer analytics and more robust business intelligence is expected to increase, giving rise to opportunities in development of innovative applications.

Industry Deep Dive: Retail

RETAIL SECTOR: AN OVERVIEW

India is the world's fourth-largest economy in terms of purchasing power parity, and re-

tail plays a crucial role in driving inclusive growth, impacting three key stakeholders: producers, workers and consumers. India's retail sector accounted for 22 percent of GDP and 8 percent of total employment¹⁰. The retail sector in India is largely unorganized, with only 8 percent¹¹ of the market being organized.

The organized segment of retail has been growing at a CAGR of 29 percent, more than double the 12 percent¹² rate of growth for the overall industry. Going forward, organized retail would increase its market share, driven by a host of factors—rising income levels, favorable demographics, increasing urbanization and nuclearization of families, penetration of plastic money, and rising rural consumption.

Some of the key trends that will shape organized retail in India are:

Foreign Direct Investment: With the Government allowing up to 100 percent FDI in single-brand retailing and 51 percent in multi-brand, international retailers will enter / expand their presence in India to grab a piece of the fast-growing local market.

Expansion of organized retail in tier 2 / 3 cities: Increasing real estate prices in tier 1 cities, lesser competition, and affordable rents would drive retailers to expand their footprint in tier 2 / 3 cities.

Online retail: Increasing Internet penetration, improved payment solutions, a growing base of web-friendly customers, and PE / VC-backed E-commerce start-ups would lead to rapid growth of the online retail format in India.

Luxury market: Higher disposable incomes and rise in the number of HNIs will increase the demand for luxury products in India.

BUSINESS TRENDS DRIVING IT ADOPTION AND KEY AREAS OF OPPORTUNITY

To support their fast growth, organized retailers will have to invest significantly in developing their IT systems to make their operations efficient, cost-effective and scalable. Some of the areas where IT will play an important role in organized retail are:

Customer interface: Retailers will increase investments in their IT systems to develop solutions that can enable them to provide best-in-class services to customers. Data analytics and customer relationship management are key IT capabilities that will be targeted by retailers. Applications for storage and analysis of data will be demanded by retailers. Companies will also seek to identify key factors driving customer decision making and predict future customer mentality, and therefore, will require solutions for the same.

Back-end processes: Organized retail demands very robust and stable back-end systems to ensure that the right products are available at

the right time and at the right place. IT spends of retailers would be focused on developing solutions to improve productivity, and managing their operations in an efficient and cost-effective manner.

- Supply chain management: Facilitates organized and efficient processes for procurement of raw materials
- Inventory management: Helps maintain a defined process of procurement and reduction of stock-outs
- Warehouse management system: Enables quick decision making on warehousing, logistics support and transportation

RETAIL VERTICAL: DEEP DIVE

Sectoral overview

- Indian retail sector growing at 12 percent, organized retail growing at 25 percent
- Three types of retail stores: single-brand, multi-brand, and e-commerce stores

Current IT adoption

- INR 6,600 crores estimated to be spent on IT by retailers
- Current adoption low as largely used by the relatively small organized segment
- Organized segment using IT across the value chain

Business trends driving IT adoption

- Higher investments, particularly FDI and consequent modernization will lead to overhaul of the IT systems
- Current players will also continue to better their services by investing in various areas like
 - Customer interface
 - Supply chain management
 - Performance management
- Growth in online retail for which IT is the backbone

Key areas of opportunity

- Tools and dashboards for better CRM, retail point of sales, supply chain management, warehouse management, inventory management and performance management
- Emerging technologies like cloud and analytics
- Solutions catering to the needs of online retail

Business management: IT will play a key role in strategic decision making by providing retailers with real-time information on their business performance. IT-enabled solutions, such as ERP, performance management systems and business intelligence, would allow retailers to accumulate crucial data on business operations so that they can develop insights on key performance indicators—thus improving business performance, meeting targets, and improving returns.

Online retail: Online retail is already a growing phenomenon in India. The presence of more advanced IT systems compared to brick-and-mortar retail is the differentiating factor in online retail. The growing trend of online retail, which is attracting interest from existing retailers, would drive IT investments in this space—both from new and existing retailers, who will seek applications and solutions to increase their presence in the virtual market.

Industry Deep Dive: Insurance

INSURANCE SECTOR: AN OVERVIEW

The insurance industry has made significant strides in the last decade, as highlighted by the strong growth in premiums, enhanced reach, growth of multiple channels, product innovation, increased competition and an enhanced regulatory framework.

Insurance penetration (premiums as a percent of GDP) grew from 2.3 percent in 2001 to 5.2 percent in 2011¹³. 23 life insurance and 23 non-life insurance companies have been added since 2001¹³. Insurance companies today use five channels—direct, bancassurance, corporate agents and brokers, dealers and agency sale force.

LIC accounts for over 60 percent of the life insurance market. Annualized new business premium for life insurance firms is more than INR 67,000 crores, while the gross written premium for non-life insurance companies is about INR 53,000¹³ crores as of March 2012.

CURRENT IT ADOPTION AND BUYING BEHAVIOR

Enhanced market reach

- *Web-based portals:* For prospective customers to avail of various products and services provided by the company

- *Mobile applications:* To track performance and progress of the sales force, and to respond in a real-time manner to clients' requirements

Enterprise applications

- *Customer Relationship Management (CRM):* To help in sales and marketing campaigns, lead management, distribution channels and policy administration
- *Business intelligence:* Warehousing and mining of large sets of data maintained by insurers, and generating business insights from the same

BUSINESS TRENDS DRIVING IT ADOPTION

- *Cost reduction due to margin pressure:* Increasing competition, economic slowdown and change in product structures due to regulations have led to a decline in margins. This, in turn, has put pressure on all spending, forcing insurers to actively explore ways of reducing costs. IT is one of the levers that will help in this regard.
- *Need for better reach and better customer service:* Since this sector is highly competitive, it is imperative for insurers to find ways to increase their reach—either through new channels or innovation in existing ones. Multi-channel integration can play an important role in optimizing the use of each channel. While insurers try to increase their reach, they are also looking at providing customers with efficient services.

KEY AREAS OF OPPORTUNITY

Based on the trends and challenges faced by the insurance industry, the use of IT is expected to increase. Following are some of the solutions that are likely to see an increasing adoption:

- *Cloud computing:* Use of cloud for various applications, BI analytics, enterprise content management and different back-office activities to result in reduced costs, and hence higher margins
- *Web 2.0:* Applications and social networking tools to boost market penetration, by driving operating expenses downward

INSURANCE VERTICAL: DEEP DIVE

Sectoral overview

- Indian insurance sector to grow at 20 percent for the next decade
- Penetration has increased from 2.3 percent in 2001 to 5.2 percent in 2011 (premium as percentage of GDP)
- Five distinct channels—direct, bancassurance, corporate agents and brokers, dealers and agency sale force.

Current IT adoption

- Focused on increasing penetration—web-based portals and mobile applications
- Various enterprise applications like CRM and business intelligence tools

Business trends driving IT adoption

- Cost reduction due to margin pressure arising from increasing competition, slowdown in the economy and change in product structure
- Need for better reach and better customer service; multi-channel integration optimization will become important

Key areas of opportunity

- Cloud-based services to reduce costs
- Web 2.0 to improve customer services and increase customer reach
- Integration of various platforms to provide seamless services through service oriented architecture

- *Service oriented architecture:* Integration of all existing applications and functions to provide consolidated access to the prevailing IT infrastructure

small clinics / nursing homes. Corporate chains today account for only about 10 percent¹⁵ of total private-sector beds. Going forward, it is expected that almost all the capacity addition will come from the private sector, with corporate chains increasing their market share.

Industry Deep Dive: Healthcare

HEALTHCARE INDUSTRY: AN OVERVIEW

The healthcare services market in India is estimated to be about INR 300,000 crores¹⁴. While the reach of the Government-managed public healthcare network is higher, private institutions have a larger share (approximately 60 percent)¹⁵ in terms of the total number of institutions. The public healthcare system mainly consists of district hospitals, Primary Health Centers (PHCs) and Community Health Centers (CHCs). The private sector is a mix of specialty hospitals, national chains, independent hospitals and

CURRENT IT ADOPTION AND BUYING BEHAVIOR

IT can be used by healthcare providers to both manage their processes better, and improve customer experience. IT systems can be used across the healthcare value chain to augment the quality of service and its efficiency. Some of the major areas of use are as follows:

Patient management: This includes self-service kiosks at hospitals, registration schedul-

ing, CRM, patient portals, billing, pharmacy management and call centers to provide further support.

Clinical layer: Various systems and applications that support the clinical layer of a hospital, including disease management, PACS (Picture Archiving and Communication System), electronic medical records, and claims management.

Performance management layer: To enhance business performance, knowledge system, business intelligence tools, as well as executive dashboard linked to BI tools.

Infrastructure layer: In addition to the various applications mentioned above, the other important aspect of IT is the infrastructure—

networking, WAN, storage systems, security systems and mobility-based systems.

The penetration of IT in the healthcare has historically been low in India, given the domination of the Government and small private hospitals / clinics—both of whom have not used IT in a substantial and sophisticated manner. However, with an increase in the number of private players, hospitals, hospital chains, as well as specialty clinics, have become more amenable to using IT systems.

The level of IT adoption and buying behavior is also a function of the type of healthcare provider:

Small city hospitals: The use of IT here is confined to computerization of basic processes

HEALTHCARE VERTICAL: DEEP DIVE

Sectoral overview

- Healthcare spends expected to grow significantly as private participation rises
- Economy, consumers, and Government impetus to drive spends in healthcare

Current IT adoption

- Significant differences in IT adoption across hospitals—larger and / or privately owned hospitals spend more on IT
- Most hospitals investing largely in hardware, expected to move towards software

Business trends driving IT adoption

- Increase in private sector participation leading to setting up of new hospitals, hospital chains and multi-specialty clinics which will use more IT than the older hospitals
- Need to improve processes, increase efficiency as well as improve customer service

Key areas of opportunity

- Business platforms: Virtualization, PACS, Patient management, ERP / CRM, BI
- Emerging opportunities: Electronic health records, telemedicine, e-Prescription and in the longer term things like Hospital Information Exchange (HIE) will become important

such as patient registration and billing, with limited use of value-add applications. Most of their purchasing is done from local vendors.

Large city hospitals: Most of the larger hospitals have implemented HMIS (Hospital Management Information System) and basic applications to support their functioning. Many of them have made significant investments in hardware, and typically use annual maintenance contracts for the same.

Large chains / specialty hospitals: The use of IT is the most extensive in this group, given the higher level of sophistication and dependence on technology. In addition to HMIS, they also have CRM and patient management systems in place. The use of custom applications for specific purposes is becoming increasingly common. Hardware support is mostly outsourced, and some large chains are also moving toward FMS and IMS for infrastructure, help-desks and data centers.

BUSINESS TRENDS DRIVING IT ADOPTION

Increase in private sector participation: Spending on IT will come from both, existing private hospitals, as well as new private hospitals and clinics. The private sector, which is more open to adopting IT systems, will account for most of the capacity addition. The need for more IT-enabled hospitals will grow with rising competition, as the focus on efficiency and better service increases. This, in turn, will drive investments in IT infrastructure and business platforms like HMIS, patient management and CRM.

KEY AREAS OF OPPORTUNITY

In addition, there are some emerging opportunities in this sector that will require extensive use of IT.

Telemedicine: The idea of providing basic healthcare to distant patients though the use of the mobile and Internet is gaining traction in India. It is a big opportunity, given that a large section of the country is underserved and has no access to specialty healthcare in particular.

Electronic medical records: Digitization of medical records and availability of patients' health records on an electronic media will help preserve patient history, and make the information easily available to different sets of doctors, if needed.

E-prescription: Computer-based generation, transmission and filling of medical prescriptions will make sharing of the same easier, and eliminate the problem of illegibility.

The next level of IT adoption will come in areas like the Health Information Exchange that will help in the electronic mobilization of healthcare information across different organizations.

NOTE:

1. CII-BCG IT End User Survey 2013.
2. Economic Survey 2010-11.
3. Indian Banking Association.
4. Reserve Bank of India.
5. Telecom Regulatory Authority of India.
6. World Bank.
7. Central Statistical Organization.
8. SME Development Chamber of India.
9. FICCI-KPMG report, "Digital Dawn."
10. FICCI.
11. IRIS.
12. BCG Report, "Building a New India."
13. Insurance Regulatory and Development Authority.
14. Research on India Report, "Hospital Market in India—March 2012."
15. BCG analysis

IT SUPPLIER PERSPECTIVE

Global Success of Indian IT Providers

The Indian IT industry has pioneered the outsourcing model, with large domestic players having built strong IT capabilities in the last decade. India continues to dominate the IT-BPO sourcing space with a 58 percent market share of the global IT industry in 2011, up from 51 percent share in 2009¹.

Indian IT providers today boast of a marquee client base globally, having worked with a large number of Fortune 500 companies across different sectors. They have been involved in important projects involving transformation of businesses, implementation of critical Government services, and adoption of emerging disruptive technologies for clients worldwide.

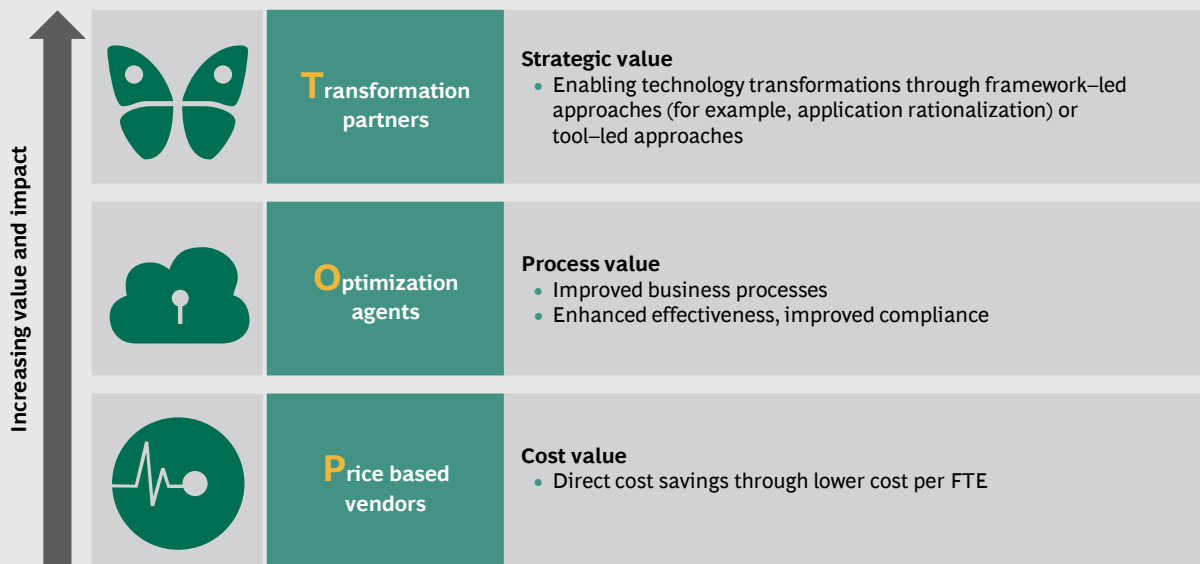
Indian providers have moved up the value chain, from being merely low-cost developers to providing comprehensive products, solutions and platforms suited to the needs across multiple industry sectors. The large players have also been investing in building their capabilities in emerging technologies such as big data, cloud and mobility, and now stand at the cutting edge of these disruptive technologies. Plus, IT companies have been investing capital to grow their portfolios—both organically and through acquisitions. As a result, Indian IT providers now dominate the global IT landscape and are continuing to consolidate their leadership position across geographies.

Domestic Opportunity for Indian IT Providers

The combined IT spend by Indian businesses, though small in size currently, is growing at a faster rate than the corresponding figure for their counterparts in developed countries who are being targeted by providers today. Given that most Indian companies have started from a low level of IT adoption, they need to use IT to change the way they function. Companies are looking to modify or replace legacy systems, standardize IT platforms and applications across the organization and adopt technology that can create significant value for the business. With their labour cost not being relevant for the domestic market, Indian IT providers now have the opportunity to play primarily in value-added areas by serving as optimization agents and transformation partners and deliver value through process improvements and technology-led transformations (as shown in Exhibit 3.1).

Capabilities built by IT providers in India can be used to create a global advantage. Products and solutions built specifically for the Indian market could be applicable in other countries, particularly the emerging economies which typically would have similar IT needs and price points. Transformative projects undertaken in India can also help build credentials for the global markets. Similarly, IT firms can learn from leaner delivery mechanisms developed for domestic clients and use them in global engagements.

EXHIBIT 3.1 | There is an opportunity for providers to play more value-adding role as optimization and transformation agents



Indian IT providers can accrue synergy benefits by having a common delivery infrastructure for their local and global operations. The nature of work done for clients in India and abroad might be different, but is based on the same set of underlying systems and processes. Hence, there will be scope to benefit from these synergies. Using a common delivery platform could be a potential way to realize these benefits. Common systems and infrastructure can help in reducing the resource base, and increasing the capacity utilization.

Challenges Faced by IT Providers in the Domestic IT Market

MATCHING THE LOW PRICES THAT THE END CUSTOMERS WANT IS A MAJOR CHALLENGE

Players have found the Indian market to be less attractive due to the cost sensitive nature of local clients leading to lower price points. This translates to a lower margin in the domestic market which poses multiple challenges to companies as they increase focus on the domestic market.

IT CAPABILITIES AND PROCESSES OF INDIAN CLIENTS TYPICALLY NOT EVOLVED

Many Indian companies do not have well-established systems and processes in place to properly engage with IT vendors, starting from project scoping to coordination of actual imple-

mentation. In many cases, this arises from their lack of experience in working with external vendors, leading to multiple challenges:

- Basic delivery is adversely impacted, leading to significant delays and cost overruns, due to a lack of effective coordination and vendor management capabilities in the end users
- “Scope creep”—frequent changes in project scope are observed due to a lack of proper understanding of IT needs and absence of complete alignment between the IT vendors and the end users
- Actual usage of many solutions in enterprises remains low despite implementation of the same due to their low internal capabilities to manage IT

Another major drawback with many Indian clients—Government-related entities, in particular, is the delayed decision making due to complex processes and / or lack of an incentive system to speed it up.

The lower level of IT adoption among Indian businesses makes it imperative for the providers to be more proactive, and help their clients understand and develop their IT systems,

necessitating a higher level of interaction with clients and a stronger account management capability.

PROVIDERS ARE BEING FORCED TO ENHANCE CAPABILITIES REQUIRED TO MEET DOMESTIC MARKET DEMANDS FOR INTEGRATED, LOW COST TECHNOLOGY SOLUTIONS

Historically, there used to be few integrated, outsourcing contracts in the Indian market. But the number of such deals has been rising recently as Indian businesses increasingly seek strategic technology partners who can provide comprehensive, innovative and low-cost solutions. Exhibit 3.2 illustrates the fact that the market, over the years, has shifted in favor of integrated deals².

The IT divisions of many organizations are exploring the possibility of consolidating their vendor base, and therefore, prefer fewer vendors with end-to-end capabilities. Firms find it easier to have a vendor who has the ability to develop and deploy applications, integrate it with existing systems, and manage the accompanying infrastructure. Progressive enterprises in the future would not only demand complete integrated solutions but

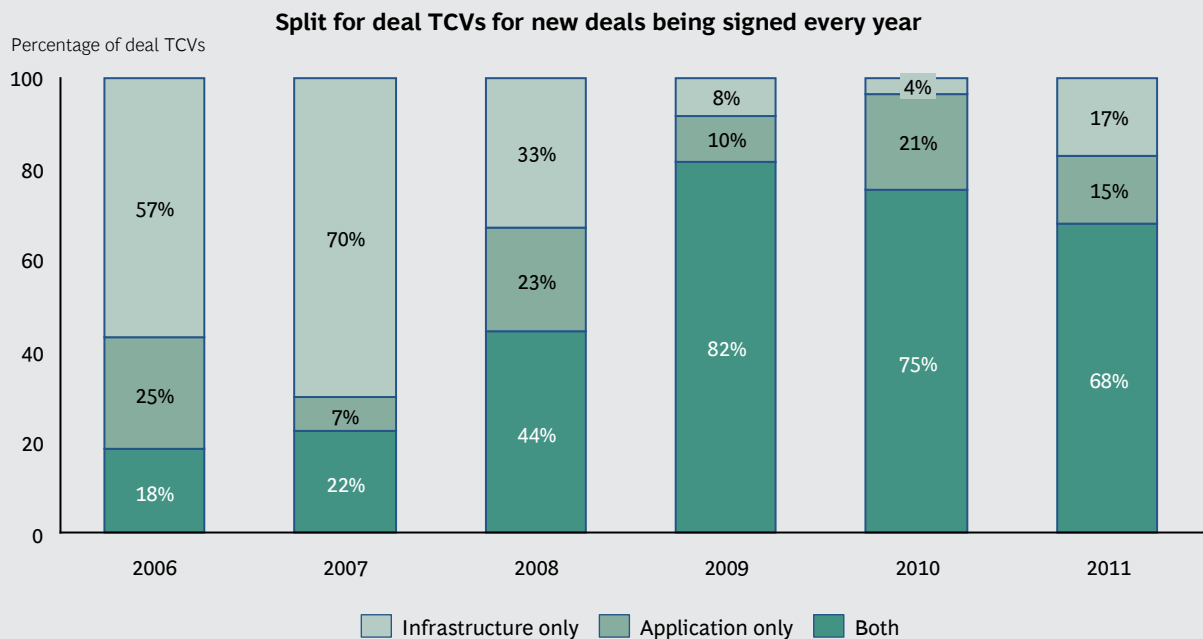
also want these solutions to be based on open standards to increase flexibility.

**Strategies Employed by IT Providers for Domestic IT Market
SELECTING THE TARGET MARKET BASED ON INTERNAL CAPABILITIES**

Providers are formulating different market positioning strategies, based on their inherent capabilities and existing relationships. This is reflected in the mix of service lines and verticals they are targeting. While some players may adopt a niche service line focus, others may have a more sector focused strategy spread across multiple service lines or may be spread across sectors and service lines.

For players who have not focused on the domestic market, breaking into some of the larger and well-penetrated verticals is challenging. At the same time, smaller but fast-growing and easier-to-win opportunities will exist in emerging verticals like retail or healthcare, which providers are now looking at more keenly. There are emerging opportunities for greater IT adoption in these sectors—organized re-

EXHIBIT 3.2 | Nature of IT deals is shifting from being only application or infrastructure based to more integrated deals



Source: Everest deal database; BCG analysis.
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tail is on the rise, private players have forayed into healthcare, and utilities are looking at smart metering to enhance their performance.

DEVELOPING CAPABILITIES SUITED TO INDIAN CONTEXT

Providers are investing in understanding the vertical-specific business needs, based on the Indian context. They see the need to develop end-to-end solutions to be able to focus on the larger IT deals that are expected to rise in India. Adoption of disruptive technologies is growing as well. Indian providers have already started providing emerging technologies like cloud and mobility in India. For example, a major provider integrated its aggregation platform with the network system of a major telecom player, enabling the latter to provide cloud-based SaaS and IaaS to its small and large enterprise clients on a pay-per-use model. Solutions such as ERP, accounting packages, storage services, as well as other applications will also be provided as SaaS to SMEs from this cloud platform.

HCL Infosystems, for example, worked with a prominent hospital chain to develop and deploy low cost Hospital Information System (HIS), using cloud-based solutions.

Microsoft, similarly, provided its web development platform to a leading communication group to develop an innovative rural marketing software.

DEVELOPING THE RIGHT PARTNERSHIP

In order to expand their domestic footprint, Indian IT providers are leveraging their global expertise to forge key partnerships. To enable quick delivery and implementation, they have forged tie-ups with Independent Software Vendors (ISVs), gaining access to applications like domain-specific solutions or tools for emerging technologies like cloud that they might not have. Providers, for example, have entered into alliances with ISVs providing core banking solutions to be able to target banking IT contracts. Leading IT providers are also effectively using contracted franchisees to expand their delivery reach beyond the metros and tier 1 cities, and reduce delivery costs.

APPLYING COST LEVERS

IT providers in India are pulling multiple levers to reduce costs, and adopting a lean approach to delivery. Rebalancing their delivery models by shifting the cost balance toward ju-

CASE STUDY: CLOUD TO IMPROVE PATIENT CARE

A multi-specialty hospital chain was looking to deploy a scalable Healthcare Information System (HIS) for their hospitals that would increase efficiency across its network, but entail lower capital expenditure than standard solutions.

HCL offered and deployed cloud across 22 of the client's hospitals. The portfolio of solutions included:

- IaaS (Infrastructure as a Service): IT infrastructure solution was provided to the client on cloud, based on their choice of configuration and operating system
- EmaaS (E-mail as a Service) which has the mailing platform on the cloud model
- BaaS (Backup as a Service) for the

clients' application suite on cloud and database server

The client has benefited by putting the entire HIS and ERP on cloud

- 40 percent reduction in capital and operating expenditure
- Scalable infrastructure; upgrade possible easily, saving time and money
- Easier monitoring and control
- Ability to create a centralized database with single-point access to patient registration, demographics and medical records, leading to improved operational efficiency

Source: HCL Infosystems.

CASE STUDY: RURAL MARKETING SOFTWARE USING MS OFFERINGS

Linterland is the specialist rural marketing and communication division of Lowe Lintas & Partners, one of India's largest and well-known communication groups. Its main objective is to help marketers gain a thorough understanding of rural markets, thereby enabling optimal and effective marketing, communication, and activation strategies for brands to connect with their target audiences.

While rural markets have stepped up on the priority of companies, they face challenges while marketing in this segment—geographical spread making reach difficult, vernacular and cultural heterogeneity and difference in decision-making process.

With the aim to revolutionize rural marketing, Linterland decided to create Linscan, a tool for rural marketing—planning, logistics, information gathering and implementation with a knowledge based intelligence system. The tool is available on both internet and mobile platforms. Linterland chose to work

with Microsoft Gold Certified Partner, Prosares Solutions. The decision was made to build the solution using the Microsoft Silverlight 4.0 web development platform for rich and interactive presentation and also because it protects on-screen content.

The benefits of the tool include:

- Accountability for rural marketing campaigns and analysis of the right media for cost-effective campaigns
- Security of proprietary information
- Scalability to accommodate growth
- More effective market prioritization through qualitative and quantitative analysis
- Effective execution with reduction of logistics costs

Source: Microsoft.

nior resources is helping many providers cut expenses. Vendors are also increasingly setting up delivery centers in tier 2 / 3 cities where they gain from both a reduced labor cost, as well as cheaper infrastructure. Many BPOs have already come up in smaller cities like Karnal, Belgaum and Vizag, while a number of IT providers are setting up remote support centers in tier 2 / 3 cities.

A large portion of the expenses for IT providers is the training cost incurred on up skilling the resources. IT providers are, therefore, focusing on trainings to up-skill resources at a faster pace, meeting skill requirements from businesses more cost-effectively. Leading providers have partnered with universities like BITS Pilani and Vellore Institute of Technology to provide customized training that helps swift onboarding of resources. Examples of such programmes range from 6 month courses for mathematics and science graduates to four year MS programmes designed for graduates.

Higher upfront investment ensures lesser spend on a recurring basis on trainings, still getting a better quality bench.

Additionally, providers are deploying contracted workforce to increase their reach beyond the metros and tier 1 cities, and reduce delivery costs by achieving a variable labor cost base. This approach also ensures an alternate resource pool that can be absorbed into the normal payrolls, if needed, and provides significant utilization benefit by reducing bench costs.

SETTING UP DEDICATED ACCOUNT / DOMESTIC SALES TEAMS

IT providers need to work closely with their Indian clients to understand their IT needs and translate into solutions. This requires a high level of interaction between the providers and end users. To target and service clients in the domestic market, providers are building dedicated sales force. Many Indian providers are leveraging their global capabilities to build local sales teams.

ADOPTING INNOVATIVE COMMERCIAL MODELS

As the market becomes more competitive and clients' needs mature, pricing models are changing. While the market has seen a shift from "time and material" contracts to fixed-price contracts, there have been a few outcome-based arrangements as well in recent years. As companies increasingly view IT providers as strategic business partners, they are looking for vendors with the ability to share business risk with them—a trend already visible in the telecom IT outsourcing deals. As a result, IT providers are adopting innovative pricing models, demonstrating a willingness to absorb upfront investments in IT and build them as a service to pay back in later phases of the contract. The Passport Seva project undertaken by TCS, is an illustration of innovative business models being used by the industry.

Indian IT providers have achieved a lot globally, but are yet to replicate that success in their own backyard. While some steps have already been taken in that direction, a lot still remains to be done. This is apparent from the IT adoption trends emerging in the industry today. Many sectors like manufacturing and utilities are still lagging in their use of IT. Several companies continue to be reluctant to outsource many of their IT processes. The real success for Indian providers will come when they are able to catalyze the adoption of IT across industries, and bring Indian companies at par with their global clients in technology adoption.

NOTE:

1. Nasscom Strategic Review—2012.
2. Everest Group deals database.

CASE STUDY: PASSPORT SEVA KENDRA

The Passport Seva Project (PSP) was initiated with the aim of transforming passport services in India. The existing system was ill-equipped to meet the increasing needs, and had limited reach and a long waiting period.

The Ministry of External Affairs (MEA) selected TCS as a partner for this project, with the IT major handling all but the sovereign activities. Key features of this project plan were:

Innovative business model

- The PSP is a PPP model, with TCS as a provider of a whole range of activities, both technical and operational
- The project has been implemented under the Build-Operate-Own-Transfer (BOOT) framework. All capital expenditure has been done by the vendor, and returns come from the fee earned on the processing of each passport application
- Multiple SLAs have been built into the system, measuring environmental parameters, customer relations,

external and internal efficiencies, as well as external, internal and technical effectiveness

Process reengineering

- Re-engineering of the complete passport issuance mechanism and related processes in order to bring in standardization, greater transparency, accountability and ease of use to all stakeholders
- Key aspects of the service transformation included network expansion (77 Passport Seva Kendras), online application and access, state-of-the-art-infrastructure (digitization of records, use of biometrics), improved amenities, multi-lingual call centers in 17 languages, and seamless integration of the processes with the Police and India Post

The PPP model has been successfully implemented, and the project has a high citizen satisfaction index of 99.5 percent.

Source: TCS.

ROLE OF GOVERNMENT

Role of the Government in the Domestic IT Market

The Government, both at the centre and the states, has a big influence on the IT adoption in the country. As buyers of IT, Governments and Government bodies are one of the largest spenders on IT hardware, software and services. Government also plays an important role as a facilitator for the IT industry through incentives and regulations which create an enabling environment.

Current Status of IT Spends by the Indian Government

In 2012, IT spends as a percentage of GDP for Indian Government was significantly lower than respective Governments for developed economies (as shown in Exhibit 4.1). The United States Government's IT spends per person was over 135¹ times that of the Indian Government. Further, Indian Government's IT spending per capita is much lower in sectors like healthcare, transport and education. Several areas which have not received adequate IT focus in the past can be completely transformed by increasing IT adoption.

The focus of IT for the Government, hitherto, has been on setting up the basic infrastructure like computerization of departments, digitization of records and network connectivity between departments and districts. As a result, the Government has been a large buyer for hard-

ware and related services, such as hardware support and system integration. Given the infrastructure is already in place across most large Government processes, the next big thrust area should be to provide better citizen services.

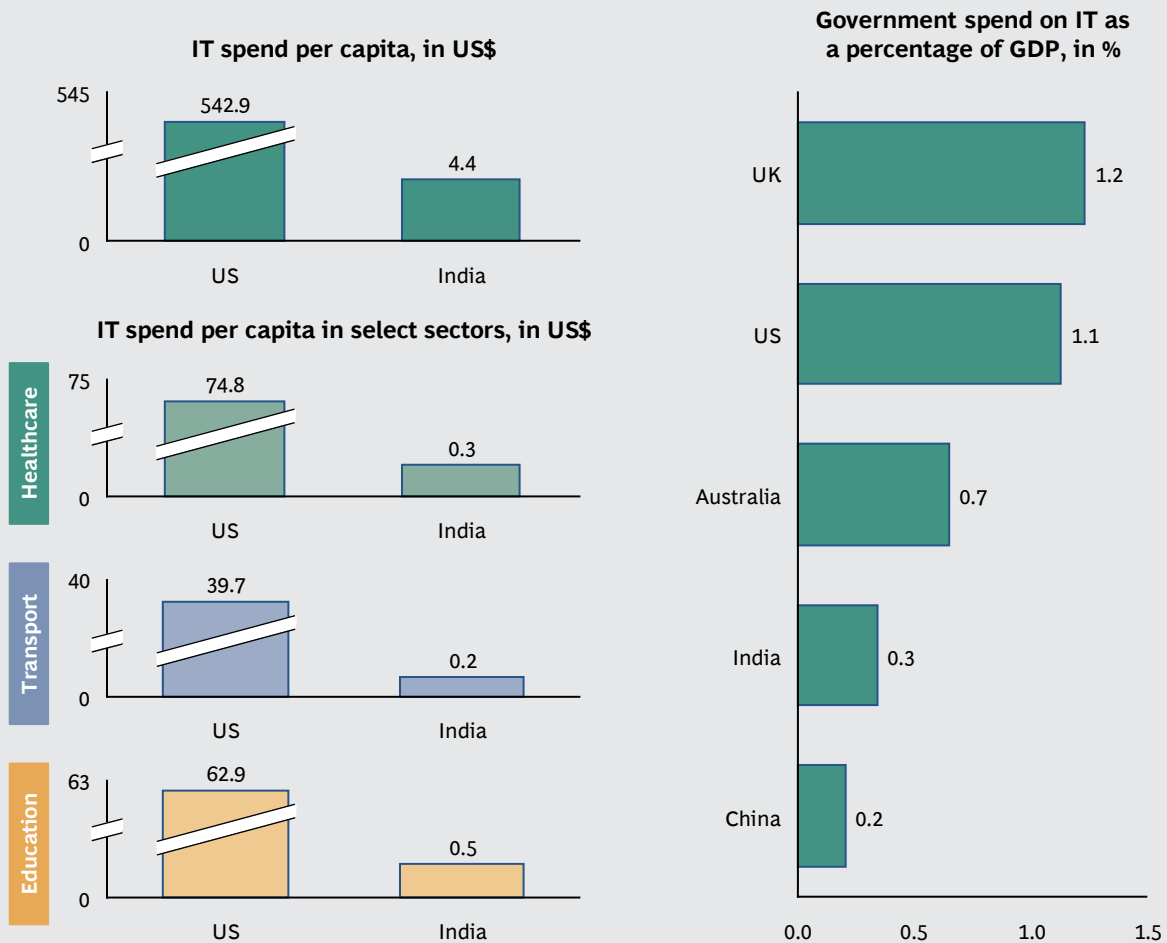
Citizen Services: Current Status, Further Potential and Challenges

The Government, in its role as an administrator, is responsible for providing a host of services to its citizens (as shown in Exhibit 4.2). In most countries this is done through the multiple levels of Government—National, State and Local. In many instances, these services are delivered directly by the Government or in partnership with third-parties such as NGOs and community organizations. The services are targeted towards fulfilling all basic necessities of the citizens like health, education, employment and enabling services like taxation and immigration. These services are provided using multiple channels, creating many different touch points with the citizens.

Application of IT to citizen services has transformed the way these services are provided. Continual technology innovation is leading to the creation of new service delivery models by bringing more services into the ambit of IT enablement.

The Indian Government has been aggressive with IT investments in massive e-gover-

EXHIBIT 4.1 | Indian Government spends significantly lesser in IT as compared to most of the developed economies



Sources: Forecast: Enterprise IT Spending by Vertical Industry Market, Worldwide, 2009–2015, 2Q 2011 Update report by Gartner; Agency FY 2013 US Federal IT budgets, reported February 2012, Public Sector IT Opportunity, India–June 2010 by Springboard Research, BCG analysis.

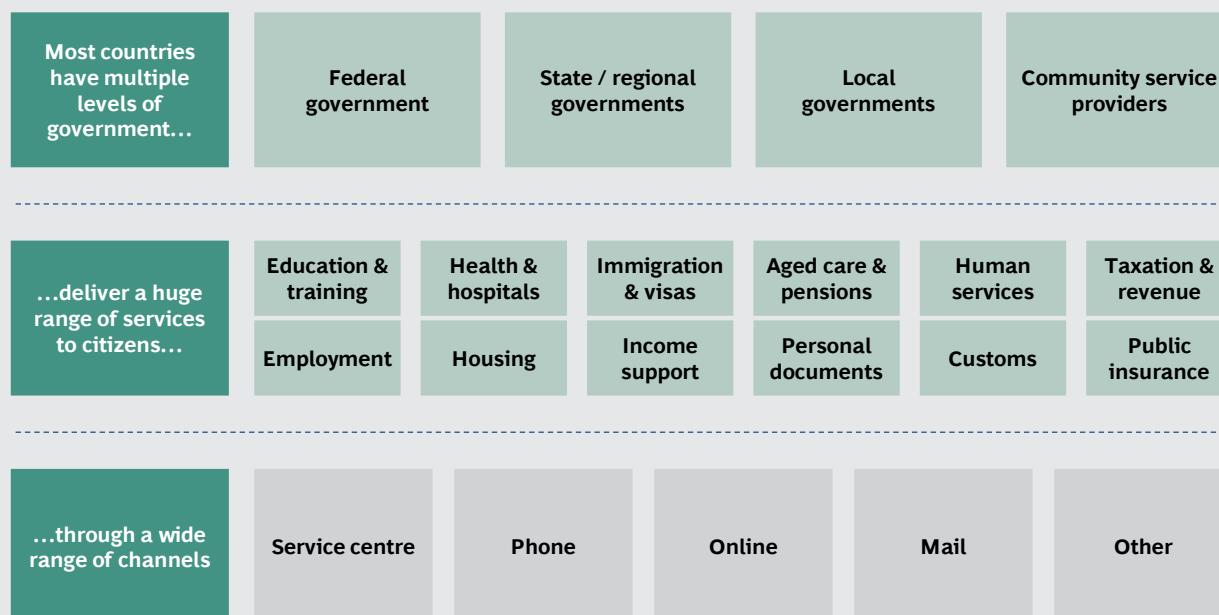
nance projects; there are plans to invest a total INR 34,000 crore² over the next five years to provide better citizen services. At the heart of e–governance in India is the National e–Governance Project (NeGP) that includes, in addition to IT infrastructure projects, 27 Mission Mode Projects (MMPs) encompassing 10 Central MMPs, 10 State MMPs and seven Integrated MMPs. An MMP is an individual project that focuses on one aspect of electronic governance, such as banking, land records or commercial taxes etc. “Mission mode” implies that projects have clearly defined objectives, scopes, implementation timelines and milestones, as well as measurable outcomes and service levels. In addition to these MMPs, the Government has also come up with various pro-

grammes and schemes to increase the use of IT in critical areas of nation–building like education and healthcare. Two of the MMPs—the UID project and Tax, as well as the steps taken in the field of Education, has been explored in this report.

THE UNIQUE IDENTIFICATION PROJECT

In 2009, the Government of India constituted the UIDAI to issue Unique Identification Number (UID), called Aadhaar, based on biometric de–duplication to every resident of the country. This number is stored in a centralized database and linked to the basic demographics and biometric information of each person. The project aims to do away with the problem of fake and duplicate records of people both in Government records

EXHIBIT 4.2 | Service delivery is public ‘face’ of Government



and outside using the unique number linked to the biometrics of each person. Over 25 crores³ Aadhaar numbers have been issued in a short period of time since its launch on September 29, 2010. It is expected that UIDAI will roll out 60 crores Aadhaar numbers in a phased manner, the largest of its kind anywhere in the world.

The Aadhaar database is hosted on a Central ID repository called CIDR powered by data centres. Important applications that have been developed and deployed include those for enrolment, authentication and fraud detection. The UIDAI has set up an on-line authentication system that can be used to verify anyone through their Aadhaar number and demographic or biometric information.

The project can have multiple benefits once the enrolments reach a critical number⁴.

Increase Effectiveness of Social Welfare Delivery

Aadhaar can be linked to distribution of cooking gas and foodgrain as well as cash transfers. The Government will be able to eliminate ghost beneficiaries thus reducing leakages, check misreporting and reduce un-

derpayment. Large-scale financial inclusion, that Aadhaar will promote, can pave the way for Electronic Benefit Transfers (EBTs) of welfare funds to residents. Aadhaar will also ensure easy mobility to beneficiaries as their Aadhaar card would be valid all over India.

Financial Inclusion

For financial institutions, the cost of customer acquisition would be significantly reduced, as resident with a UID would require no further identification to get a bank account. At the same time, cash handling and transaction costs will decrease as electronic transfers at the last mile will become easier. Thus, the project will bring financial access and affordability to millions of residents who are presently excluded from formal financial systems. Payments and remittances will become cashless hence cheaper and less-risky.

Healthcare Services

Use of Aadhaar in healthcare services can catalyze the formation of a national database that captures health related information of the citizens. This can be achieved by linking the Aadhaar number to an individual's health records. This can provide multiple benefits—better medical care due to availability of medical records, and a tool for dis-

ease surveillance, national health monitoring and monitoring service level of the public healthcare system.

Education and Skills Platform

Like healthcare, there are other areas like labour and skill management database where Aadhaar will be helpful. An 'Electronic Education Record' of citizens can be made which can be leveraged in post-education employment opportunities. By requiring schools to register for Aadhar numbers, records can also help the Government enhance service provision and monitor Government schemes.

Better Management of Agri-supply Chain

Greater efficiency in management of supply chains is possible at different levels—better tracking of suppliers and their produce, greater insight on agri-production across the country and cashless payment to producers.

Benefits for Businesses

There are many ways in which enterprises can benefit:

- Companies that require customer verification or KYC documentation could authenticate using Aadhaar. This will make the process of verification paperless, faster and hence cheaper. Telecom and credit card companies are two industries that could benefit from this model
- E-commerce and m-commerce companies could use Aadhar authentication system to eliminate fake orders and also enhance rural distribution
- New revenue streams are possible for small retailers by equipping them with Aadhaar-enabled terminals that could be used for telecom KYC or as a micro-ATM

EDUCATION

The Government has leveraged IT extensively to tackle the education problem in India. Given the geographical expanse of India and an inadequate educational infrastructure, the Government aims to bridge the gap using IT. It is being leveraged not only for K-12 education, but also for higher education as well as vocational training. Several programmes and policies have been formulated

to increase adoption of IT in different segments of education.

ICT in Schools Scheme⁵:

This scheme was launched in 2004 with an aim to facilitate basic IT skills amongst school-going children and ICT as an aid for education in Government-aided schools. The scheme provided support for procurement of various devices and IT infrastructure—peripherals, software, and network equipment. Under this, 'SMART' classes in Government-run Kendriya Vidyalayas and Navodaya Vidyalayas have been set up. About INR 320 crores were released for this between 2005 and 2008.

EDUSAT⁵

This is a dedicated educational satellite launched in 2004 by ISRO with an aim to promote interactive satellite-based distance education. Some of the projects that it is supporting include:

- The 'Virtual Classroom Technology on EDUSAT for Rural Schools' (VICTERS) programme uses the satellite for training teachers, providing high-speed net connectivity to schools, and for implementing learning management solutions
- The 'Rajiv Gandhi Project for EDUSAT Supported Elementary Education' (RGPEEE), a collaborative project of Indira Gandhi National Open University (IGNOU), Ministry of Human Resource Development (MHRD), and ISRO, promotes the use of EDUSAT in enabling teachers to incorporate ICT in elementary education. It is operational in Madhya Pradesh, Chhattisgarh, Uttar Pradesh, and Bihar
- Various universities have also been using it to impart long-distance education

National Knowledge Network⁶

This ambitious project launched in 2010 with an outlay of INR 5990 crores aims to leverage IT to promote knowledge sharing and collaborative research. It envisages a high-speed digital broadband network interconnecting the country's major research and educational institutions, colleges, and universities. Till October 2012, more than 800 institutions had

been connected to the network and 61 virtual classes set up.

Sakshat Portal⁷

The Sakshat Portal launched by the MHRD in 2006 is a single window portal for all education-related needs of students, teachers, and lifelong learners. The portal envisages providing one stop solution to educational requirements of learners covering all fields of study including vocational education and life skills in the form of e-books and e-journals. Content development for each subject was entrusted to a Content Advisory Committee (CAC) consisting of representatives from institutions like UGC, AICTE, CBSE, IITs, IISc, IGNOU, Delhi University, KVS, NVS, NIOS, and NCERT, as well as prominent academicians in the field.

The Indian Government has only just begun the journey and the scope to increase IT adoption to provide citizen services is huge. Among the many areas that the Government will continue to invest and focus on, five select areas are highlighted in Exhibit 4.3. While in some cases ‘mission-mode’ status has been given, the criticality of these services requires continued focus.

Online Delivery Platforms

These will consolidate all relevant capabilities across Government bodies to achieve the

greatest level of integration and efficiency across processes like issuance / changes related to identity documents (ration cards, passports, voter IDs, cards for different schemes, banking account details), complaint registration, records and information management on minimum standards of provisioning (water sanitation, road safety), online application of licenses for new business registration etc. Some services like application for passport and filing of taxes have been made online but the next step is to integrate all services onto a common platform.

For example, recent investment in an integrated portal by the Government of Denmark is estimated to reduce long term costs and simplify information management. Similarly, Singapore provides 270 e-services to citizens linked to a common authentication system, SingPass which has led to an eight-fold increase in the number of authentications from 4.5 million in 2003 to 40 million in 2010⁸.

Transportation

There are many opportunities in the transport sector where IT adoption can play an important role in providing citizen services like integrating location-based tracking services to manage and convey information on vehicle breakdowns, delays and route deviations, revenue management, integrated traffic-man-

CASE STUDY: FASTER AND SMOOTHER FILLING OF INCOME TAX

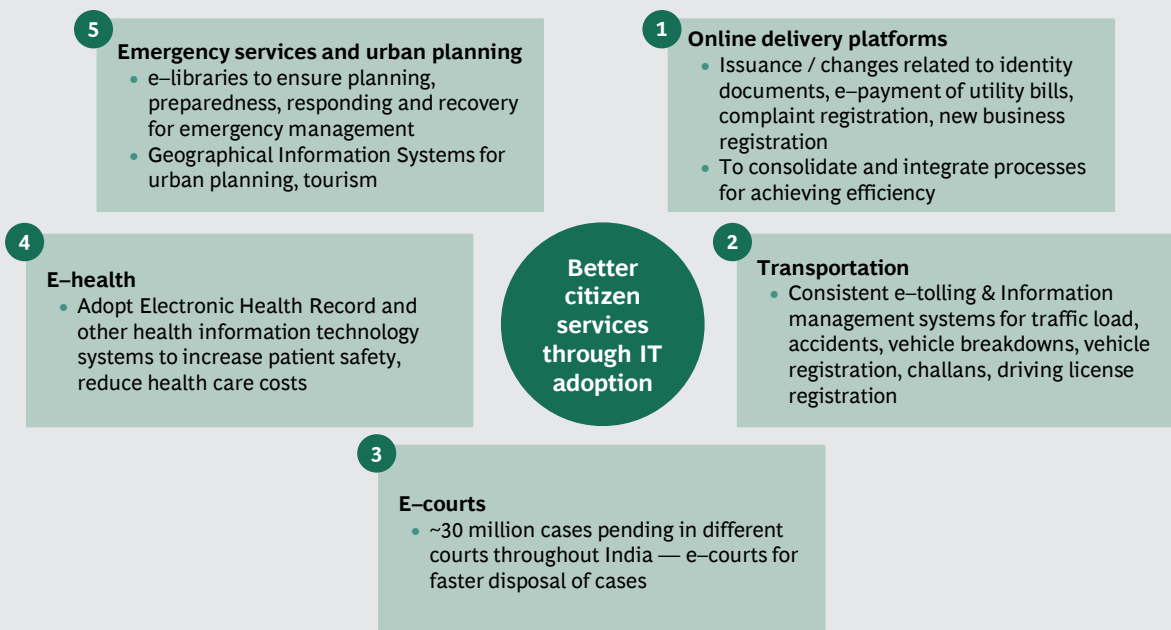
The Income Tax Department (ITD) of the Government of India partnered with Infosys to establish a Centralized Processing Center (CPC) for handling Income Tax Returns (ITRs). By December 2011, 20 million IT returns had been processed through the CPC. Advantages from the CPC include:

- Reduction in processing time of e-filed tax returns to 67 days from 169 days in 2009–10
- Faster refund of income tax and hence lower interest payable, as a percentage of refund—down from 15 percent in FY 2008–09 to 4 percent in FY 2010–11

Infosys is also working with the ITD to implement a comprehensive IT system that will introduce greater efficiencies in processing Tax Deducted at Source (TDS) statements. Through this program, the ITD plans to implement standardized procedures to handle errors, thus enabling timely reporting and improved service for deductors. When completed, the project is expected to handle up to 300 to 400 million transactions per year. This is a five year project with expected transaction growth of 10 percent year on year.

Source: Infosys.

EXHIBIT 4.3 | Five additional areas to focus on for delivery of better citizen services through IT



agement solutions, parking solutions, and driver information management (card issuance, management, challans). India is way behind many of the developed countries that have used this very effectively, and it is imperative for India to invest in this area.

E-courts

There are about 30 million⁹ cases pending in different courts throughout India. E-courts provide an opportunity for faster disposal of cases. As an MMP, there is a proposal to implement IT in the Indian judiciary in three phases over a period of five years. The project scope is to develop, deliver, install and implement automated decision making and decision-support system in approximately 15,000 courts across the country. Ensuring timely and effective implementation of this MMP is critical as the judicial system needs urgent attention. The judicial process needs to catch up with the service levels being demanded by the citizens. Recent demand for fast-track disposal of cases on crime against women could be met by the use of technology in starting the process and making available legal proceedings online apart from just

policy intervention. Government should continue to invest in this space to ensure complete demystification of the adjudicatory process thereby ensuring transparency, accountability and cost-effectiveness.

E-health

E-health is the adoption and effective use of Electronic Health Record (EHR) systems and other Health Information Technology (HIT) to improve healthcare quality, increase patient safety, reduce costs, and enable individuals and communities to make the best possible health decisions. Across the nation, e-health is emerging as a powerful tool to transform the healthcare system and improve the health of communities. The current NeGP implemented by the Indian Government aims to create 100,000¹⁰ Common Services Centres to make information available on vaccination schedules, maternity care, family planning, ambulance services etc. across the country as the first step. Speedy implementation is again the key for this sector, given the lack of proper healthcare infrastructure today. Also, there is more that can be done. The Government should take inspiration from a similar initia-

tive launched by the Department of Health, Minnesota which aims to establish an interoperable electronic health record system within hospital networks or clinical practice setting by 2015.

Urban Planning and Emergency Services

The Government needs to increase the use of Geographical Information Systems (GIS) for urban planning, tourism and providing need based infrastructure services. GIS can transform the urban planning process and we are yet to utilize its full potential. While the Planning Commission has already constituted the National GIS Interim Core Group to suggest ways of improving the use of GIS, faster formulation and implementation of a policy is needed. There also exists opportunity in investing in systems that assist communities with emergency services—planning, preparedness, response and recovery in case of human caused (chemical spills, fires) or natural emergencies (tsunami, earthquake).

Health and E-courts are already MMPs but their complete implementation is still some

years away and the Government needs to keep its focus to ensure a timely delivery as these are critical services, development of which have for long been neglected. In the other areas, there is a need to come up with policies and programmes that can ensure a faster roll-out of such services. Hence, action will be needed both on the policy as well as the implementation front.

Government needs to invest in its IT capabilities to effectively leverage IT in citizen services in the right way and to deliver these projects on time.

Using IT for providing better citizen services will be challenging. Trying to transform the environment into an eco-system that is truly integrated and citizen centric is not easy. In reviewing the citizen services delivery networks of most countries today, we have found some common challenges:

- Countries such as India that have a vast geographic spread often face an issue with equity of access in regional and rural areas. Broadband connectivity is still an

CASE STUDY: DENMARK'S 'MY PAGE' INITIATIVE FOR CITIZENS

Primary goal of “My Page” is to make it faster and easier for citizens to become self-served through the internet. There was a clear need for better integration across the Government and private sectors when the page was set up. A 2005 survey revealed citizens wanted interactions to be based around life situations rather than Government organization.

This led to the design and implementation of this initiative. Some of the key features are:

- An internet accessible integrated information portal for citizens to access information about them held by public authorities
- Includes data about taxes, insurance, social security number and will expand

to include child benefits, rental assistance etc.

- Access is provided using authentication of a digital signature (NemID)
- Information and solutions divided into “civic themes”—first available are housing, economy, children and retirement

The initiative has been a great success. It has provided single sign on for common transactions and a secure document storage for citizens. It has reduced costs for public sector as more citizens use online self-service (It costs up to 30 times more to inform a change of address in person than online).

Source: <https://www.borger.dk/>

issue in many places in India making the delivery of these services to all more challenging

- In trying to get policies implemented quickly and efficiently, many a times, Governments are not able to spend enough time planning for systems that will be relevant for a long time. New policies and systems are typically just added to existing ones leading to systems that are not rationalized. This organic evolution creates systems that are often optimised for ongoing operations only. Hence, making changes to these systems later becomes expensive and time consuming
- Increasingly citizens are becoming more literate and self-sufficient—who are capable of managing their own affairs. In some cases, Governments may want to impose a service delivery burden on IT providers for policy reasons, but often, inconvenience is baked into service delivery because of poor design. This happens due to the lack of information flow between the Government, who makes the policy, and the IT provider who delivers the service

The Government needs to build on its internal ICT expertise to ensure better project outcomes as insufficient internal capability creates many problems. A recent Nasscom newsletter focusing on e-governance attributes many of the project failures and challenges faced to problems in project conceptualisation, scope definition, vendor selection and poor execution due to shortcomings both on the Government and the implementing vendor's side¹¹. A strong IT organisation with well-defined processes will help solve many of the problems.

Maintaining sufficient IT skills in Government can be challenging, given broad diversity of functions and departments. Adopting common frameworks and tools, and sharing best practices are typically of value in a wide range of Government contexts. Developing centres of excellence through recruitment of qualified talent is critical to lift the level of critical internal expertise (as shown in Exhibit 4.4).

There is a need for greater project management oversight by internal skilled IT experts and scrutiny in IT project management. Lifting process maturity across the Government is typically of great value, but there is merit in also adding some oversight through project status reporting and setting maximum project size limits. Many countries face pressure to increase efficiency and effectiveness of IT spend given tight fiscal environments. Increasing scrutiny and transparency of IT spend across departments through benchmarking is a critical enabler to drive efficiencies, inform Government's IT investment decisions and ability to track performance over time. An example from The United States is provided in the case study¹².

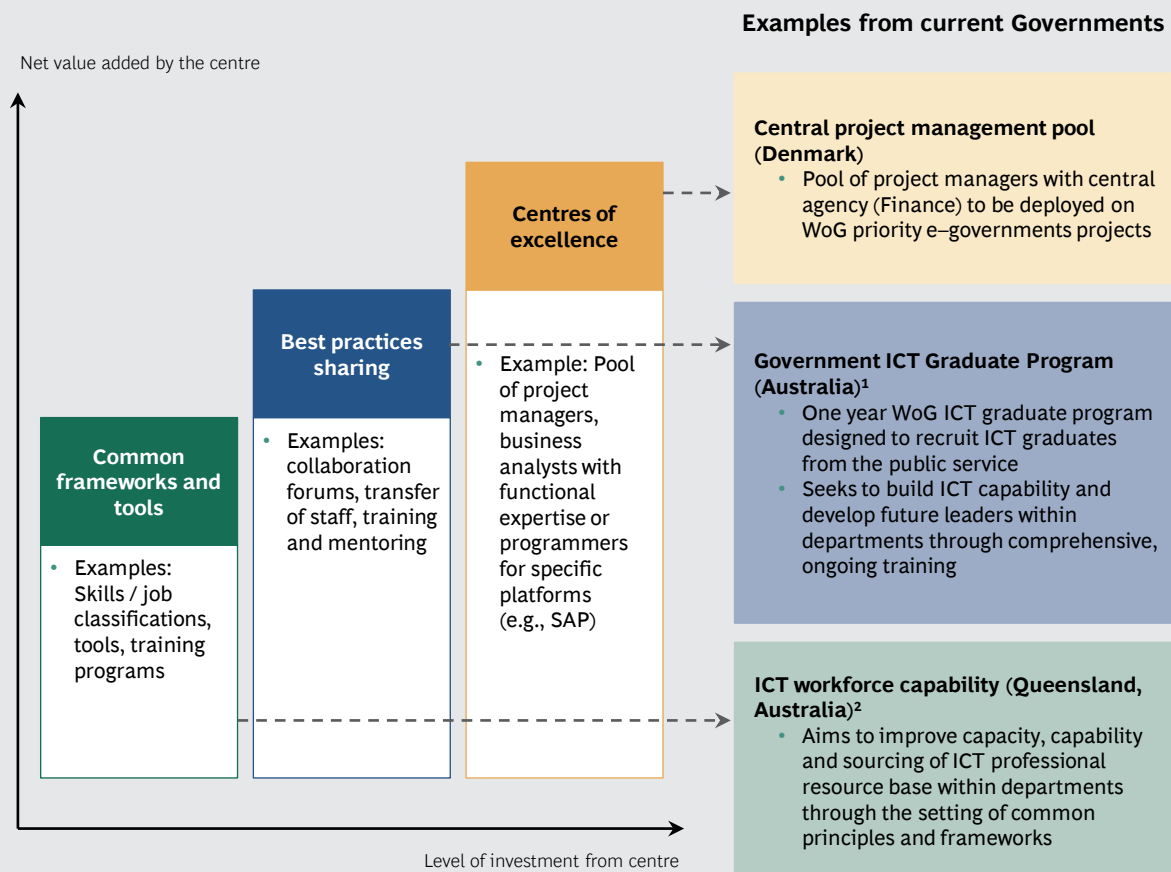
Role of IT in Improving Process Efficiency across Government Undertakings

Many Government projects face time and budget overruns given the complex and long-drawn nature of the decision processes involving multiple stakeholders. IT can help streamline processes in many ways. By bringing all stakeholders together, an online process helps in increasing efficiency, thus eliminating the time spent on moving documents from one desk to another.

E-procurement is an area where many Governments have worked to bring about process efficiency. While many PSUs in India are already using the electronic platform for their purchases and reverse auctions, coordinated procurement using standardized process across different Government bodies is still to be implemented. In Brazil, an online procurement system is being used successfully by over 1,000 federal Government procurement units. Australia too has a coordinated procurement system in place that has helped the Government save millions of dollars and made the process more efficient and faster with better results.

Process excellence critically depends upon the quality of the underlying technology platform. Most process-related changes cannot be implemented without the appropriate upgrade in technology. Many PSU banks, for example, face this issue. They are looking to en-

EXHIBIT 4.4 | Opportunity to build level of skills and ICT expertise across Government



Source: BCG analysis.

¹agimo.govspace.gov.au

²Queensland Government ICT capability framework.

hance productivity which requires investment in technology as they do not possess many of the system capabilities that will help them do so. (as shown in Exhibit 4.5)

Further Steps that will Help Leapfrog the IT Evolution Trajectory

Although the Government has already taken several steps to adopt IT in Government and governance, more effort, in addition to the IT projects, MMPs and schemes already underway, is needed to ensure India is able to catch up with developed countries faster.

INVESTMENT IN EMERGING AND DISRUPTIVE TECHNOLOGIES TO TRANSFORM THE WAY THE GOVERNMENT WORKS

Big Data: As e-governance and other Government projects try to digitize information, the

biggest challenge will be managing large databases and using them effectively. This is where big data will be critical, both in terms of storage of the data and analysis of the same to use it effectively. UID is one initiative that will benefit from big data. The large volume, variety, and velocity of data brings along many challenges that cannot be solved by conventional technology. Similarly, big data is relevant for the income-tax department, which receives filings from over 30 million tax-payers¹³. Storing this data and drawing insights from this will be important in improving policies around tax collections.

Cloud-based solutions: Disruptive technologies like cloud can help increase the efficiency as well as reduce the cost of providing services by consolidation of infrastructure and critical technical skills across various Government departments. While these provide savings to

CASE STUDY: UNITED STATES ICT DASHBOARD PROVIDES TRANSPARENCY BY PROVIDING IT SPENDS ACROSS ALL GOVERNMENT DEPARTMENTS

The United States is the world's largest Government ICT purchaser: ~US\$ 100 billion annual ICT budget¹ spent on over 7,000 Federal IT investments. The U.S. Government developed an IT Dashboard based on spend data from all of the U.S. agencies to improve Government transparency, and foster accountability.

The dashboard provides data in real-time that looks at project portfolios, budget performance, and spending over time. The public can view project details as well as contact those responsible for delivery. An overview of the key features of the Government's IT dashboard is as follows:

Data made public

- Total IT spending
- Investment count
- IT spend by each department / agency
- IT spend by funding sources
- Percentage change in IT spends in each department

Project evaluations made public

- Projects bucketed into 'normal', 'needs attention' and 'significant concerns' based on cost, schedule, and investment evaluation
- Projects eliminated or downgraded listed separately

Efficient user interface employed

- Visualization available for the data provided—both the trends and the treemap
- Data feeds available to the public

The Federal IT dashboard allows key decision-makers to review projects in order to identify those in trouble. For example, US\$ 193 million in costs were avoided by terminating the Department of Justice's failed unified case tracking system—the project's price tag had doubled since its start in 2006²

¹National and international spend for 2012, Gartner Forecast: Enterprise IT spending by vertical industry market, worldwide, 2010–2016

²Remarks by Vivek Kundra to the Office of Management and Budget 20/09/2012

Source: Federal IT Dashboard: <http://www.itdashboard.gov/>

all departments, small departments, that lack scale or expertise, benefit the most.

- For example, United Kingdom has invested in a single public / Government services network on cloud using multiple network service suppliers to provide seamless connectivity, increased interoperability and improved service assurance. It delivered target savings of US\$ 105m for 2011/12, with anticipated long term savings of approximately US\$ 800m¹⁴ a year
- Another example is that of Switzerland, where the Government invested in shared infrastructure services for the entire Government end user base excluding

defence. The Government currently operates networks (10,600 monitored LAN components), central service desk (64,000 job tickets processed in 2008) serving over 1,900 federal Government and canton agencies¹⁵

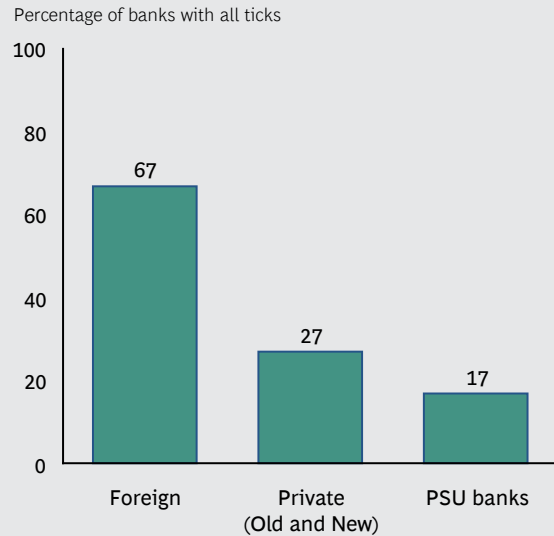
Mobile and Internet: Though already quite prevalent, these are two important areas that are helping in inclusive development. The Government has been supporting investments in these technologies. Low-ticket banking transaction costs, through use of mobile, have reduced significantly thus making it easier for banks to serve smaller customers. M-governance leverages mobile technology to provide better services to citizens conveniently, and in a cost-effective way. This would,

EXHIBIT 4.5 | Five key areas for productivity enhancement in banks that will require investment in technology

Systems capabilities required in banks

- ✓ Systems that allow for customer level view across all products
- ✓ Systems that allow for return on capital assessment on deals with customers
- ✓ Data warehousing for risk management modelling and customer relationship management
- ✓ Workflow automation in HR processes
- ✓ Workflow automation in retail credit process

Only 17% of PSU banks have the required system capabilities



Source: BCG–FIBAC 2011 survey responses.

however, require establishing an information–security system, as well as rebuilding and optimizing the administrative business processes to implement m–governance. The Government should, therefore, invest in making available m–governance services through use of appropriate technology to ensure secure and optimized processes.

STANDARDIZING DATA, APPLICATIONS AND PROMOTING SHARED SERVICES TO DRIVE SYNERGIES ACROSS DEPARTMENTS

Managing data better: Government controls a large and ever–increasing amount of data about citizens, public services, and the world around us. From individual tax records to weather maps and economic statistics, the range of Government data is diverse and the potential uses of those data are enormous.

Government data can create value by providing better public services and improved accountability, which would in turn result in higher economic growth. These come about through improvements to systems and processes within a Government organization, improved interactions with citizens, and improved interactions between Government organizations.

Better public services can be achieved by using data to find efficiencies and enhance collaboration. Improved accountability stems from using data to inform evidence–based decisions and enhance transparency. Higher economic growth can result when insights about industry are used to foster efficiency in the private sector as well as to promote equitable regulation.

There is no shortage of data being collected and held by Government agencies. But the challenge for Governments when extracting value from data is to ensure that the data they collect in the first place will ultimately serve the purposes for which they were intended. To do this, Government needs to develop standards and protocols on how data will be collected and analyzed and who will have access to it.

A promising example of how one Government is doing just that is already under way in the U.K. It is estimated that welfare fraud and error cost U.K. taxpayers £5.2 billion every year, or £165 every second¹⁶. In addition to being expensive, fraud also undermines the public’s confidence in the welfare system. Better use of Government data lies at the

heart of a new strategy to reduce fraud and error by 25 percent by 2015. When it designed this strategy, the U.K. Government carefully considered the implications and limitations of data sharing both between Government organizations and with private organizations. A clear description of the data rights held by each party enables mutually beneficial data sharing and collaboration to take place while addressing questions of personal privacy.

Standardizing applications and shared services:

The applications landscape within Government is complex, given the diversity of business processes. But there are many common processes and many instances of sharing information within different Government bodies where standardization can add value by reducing complexity, rationalizing processes and improving service levels. Investing in standardizing applications across departments and establishing an applications management shared service that provides a single service to multiple departments could be a potential area of spending for the Government.

Many Governments have invested in building shared service centers and standardizing applications across departments. For example, the European Ministry of Defence bundled services of four divisions. The scope included support services like IT, real estate, medical services, HR, transportation accounts and training. This shared service centre has resulted in service improvement and savings of over €200m¹⁷. Another example is the Canadian Government's support to take measures to streamline and identify savings in Information Technology (IT) through implementation of Shared Services delivery model.

The Indian Government, although a late adopter of IT, has come a long way. The Government has put policies and structure in place to promote the use of IT in Government. However, given the late starting point, there are many places where greater application of IT is needed. The Indian Government can learn from the programmes and policies of Governments in more developed countries. The focus on IT will only rise as demand for better citizen services increases. The Government will need to work on, not only adopting newer technologies, but also improving its internal IT capabilities and processes to manage such massive projects.

NOTE

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IT FOR INDIA— A CALL TO ACTION

Taking forward IT Adoption in India

IT is increasingly becoming ubiquitous—people, businesses, Governments, and even machines, can communicate in a real-time manner. IT has evolved from providing basic automation and cost efficacy to transforming businesses outright. Leveraging IT effectively can have a “leap frog” effect on

the Indian economy. However, to realize this potential, all stakeholders will need to work in close concert—developing plans and strategies to leverage IT, building the required capabilities, and collaborating effectively to achieve success. Here is an eight point action plan for the end user industries, IT providers and the Government (as shown in Exhibit 5.1).

EXHIBIT 5.1 | Eight point action plan for IT adoption in India

Each stakeholder needs to play a critical role

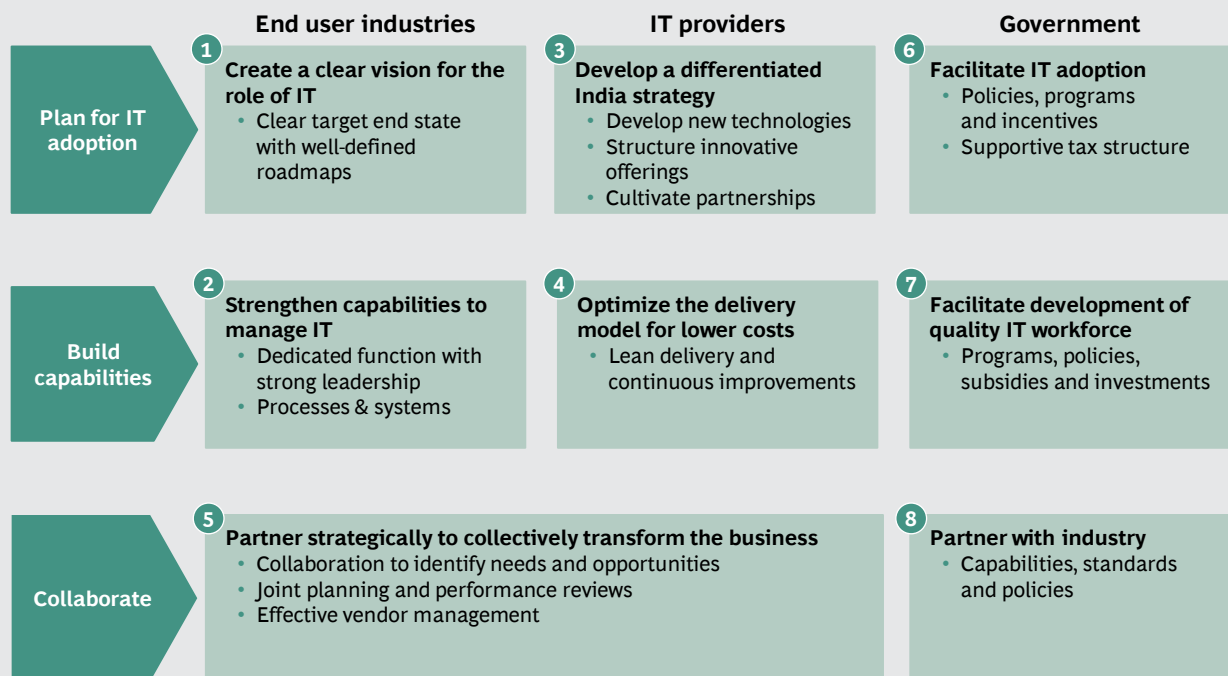
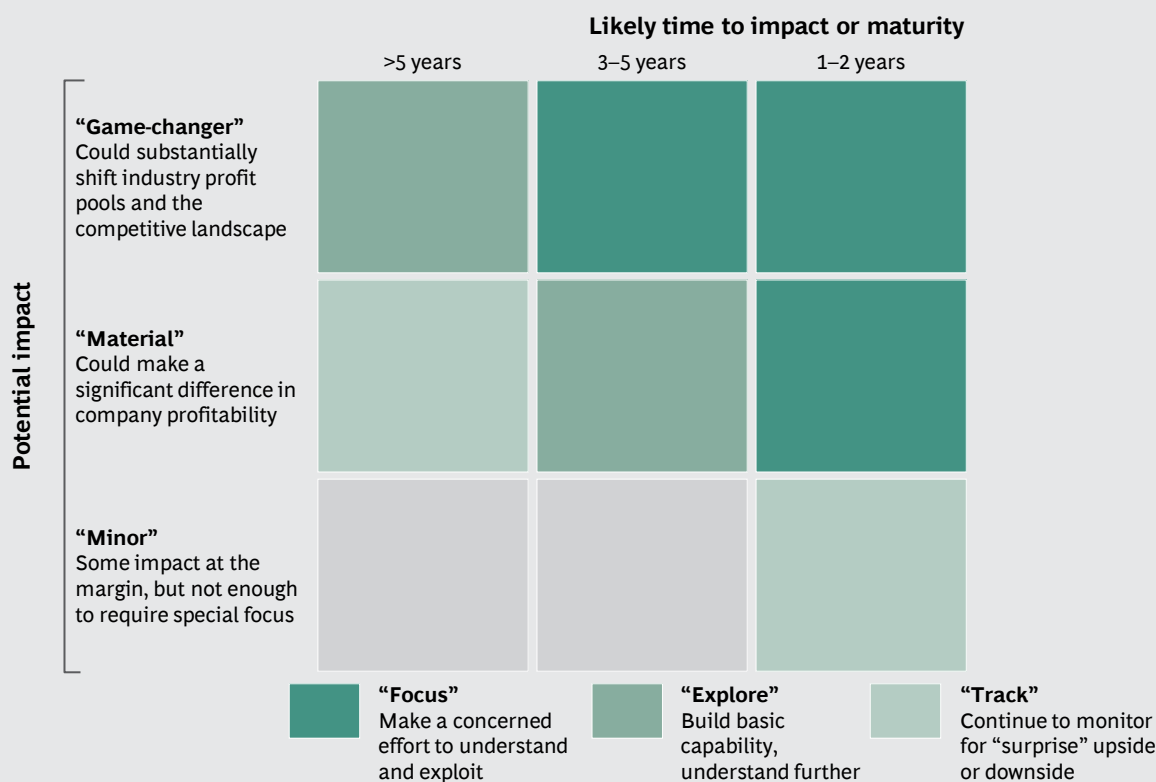


EXHIBIT 5.2 | What's most relevant for the near-term game plan?



Source: BCG analysis.

Eight Point Action Plan for IT Adoption in India

FOR END USERS: DEVELOP A CLEAR VISION FOR ROLE OF IT IN THE BUSINESS MODEL

Successful technology adopters continuously evaluate market and technology developments to form a view on the role of technology in delivering competitive advantage. They clearly assess the market landscape and recognize industry change as it happens, which could be in the form of regulatory amendment, entry of new players, or shifting demand-supply drivers. They combine these market developments with their view of emerging and available technologies, what other industries are doing, and new / emerging vendors coming into the market to define choices about their IT framework.

It is important for companies to set the target end state for their IT capabilities by developing realistic multi-year road maps prioritized for early value delivery. The plan must also

incorporate internal capability building efforts for the long term, while still allowing the company the flexibility to respond to the next wave of technology. To understand the full potential of technology IT and business functions need to work closely. Companies must avoid creating technology and business / operations silos which can diminish their ability to leverage IT effectively.

FOR END USERS: STRENGTHEN CAPABILITIES TO MANAGE IT

Successful technology adopters embed technology in their operating model by transforming processes, skills, and culture. They recognize that it is not simply a matter of adopting emerging technologies, but about using experience and expertise to streamline change and ensure that benefits of technology are delivered as promised. Having a dedicated internal technology function, coupled with strong, visible leadership support, are basic requirements.

The role of an organization's CIO and the IT department in general is slowly starting to mirror that of an orchestra's conductor. IT needs to deliver on traditional "run-the-business" activities such as running data centers, managing networks, and operating help desks. Simultaneously, companies are leveraging external providers for many "change-the-business" activities like software development and use of emerging technologies. The IT department needs to deliver on a wide range of responsibilities—understanding business needs, developing target architectures, standardizing IT, designing solutions, managing a network of external providers and monitoring the performance of this network. IT departments need to become successful orchestrators if they wish to survive and flourish in today's competitive environment.

An over-arching framework is often helpful to navigate through the complexities of IT

management and to track the value derived from IT. The Innovation Value Institute (IVI) is a global consortium of leading industry, Government, not-for-profit, and academic organizations, with an agenda of establishing a gold standard for managing IT for creating business value. IVI institute has developed an IT Capability Maturity Framework (IT-CMF), a state-of-the-art assessment framework designed to help IT departments maximize their contribution to business value. The IT-CMF incorporates elements of existing IT frameworks, such as CMMI (Capability Maturity Model Integration), COBIT (Control Objectives for Information and related Technology) and ITIL (Information Technology Infrastructure Library), and builds on them further. It takes a holistic approach and covers all IT activities in a single framework using a consistent methodology.

The framework segments a company's IT function into four types of macro-process-

EXHIBIT 5.3 | IT Capability Maturity Framework consists of 32 critical capabilities grouped into four meta-capabilities



es—managing IT like a business, managing the IT budget, managing the IT capability, and managing IT for business value. Each macro-process is defined at granular levels, and incorporates multiple processes. Overall, the framework examines 32 such processes (as shown in Exhibit 5.3). It can be particularly useful for new CIOs seeking to understand the strengths, weaknesses, and drivers of the IT organization’s performance.

For managing external IT vendors, organizations need to develop capabilities similar to traditional procurement functions—accurate demand assessment for IT requirements, project scoping, robust vendor selection process and best practices in contracting. It is important to assess the IT function’s IT sourcing capabilities and use benchmarking to continuously optimize the sourcing mix and set up.

Companies need to have a system in place to track the progress of various IT projects against the pre-determined timelines, service levels and other KPIs, and take appropriate actions based on the vendor’s performance. Many IT projects fail during the change effort required to get end users to migrate to new systems and processes. It is important that companies track the benefit arising out of the projects post implementation, and conduct a root cause analysis if the benefits fall short of projections.

Companies need to start focusing on strategic workforce management—taking a longer term view on IT personnel, and actively thinking about needs and constraints with regard to the company’s business and IT strategies. Rigorous workforce planning and assessment of internal demand and gaps will ensure that required resources and capabilities are in place, as and when required. IT organization will be able to identify the resource shifts required for new roles, as well as the needed for IT to become a trusted business partner.

FOR IT PROVIDERS: DEVELOP A DIFFERENTIATED INDIA STRATEGY

The Indian market will be a key focus area for any IT provider’s country portfolio mix, given its fast growth potential and eagerness to leverage IT. However, a simple “copy paste” approach replicating the strategy deployed in overseas markets will not work in India. With

profit margins not guaranteed, the IT provider will have to focus more on innovative products and solutions to bring down the price point. There are several aspects of the Indian IT stack that need to be considered to effectively tap into the India story (as shown in Exhibit 5.4).

Develop new technologies to address unique Indian needs

Most Indian companies today are looking to increase the extent of IT usage in their organizations. They are willing to explore cutting edge technology to create a competitive advantage. The challenge for IT providers is to use innovative technology, effectively, to provide higher productivity and lower costs for customers.

Unlike traditional projects where providers gauge the IT requirements, the focus in India needs to shift toward understanding the business drivers. IT providers will increasingly need to understand what the customer’s business is about, how it is delivered, and how it can be measured. Providers will need to realign their products, processes and infrastructure to help the customers achieve their business goals.

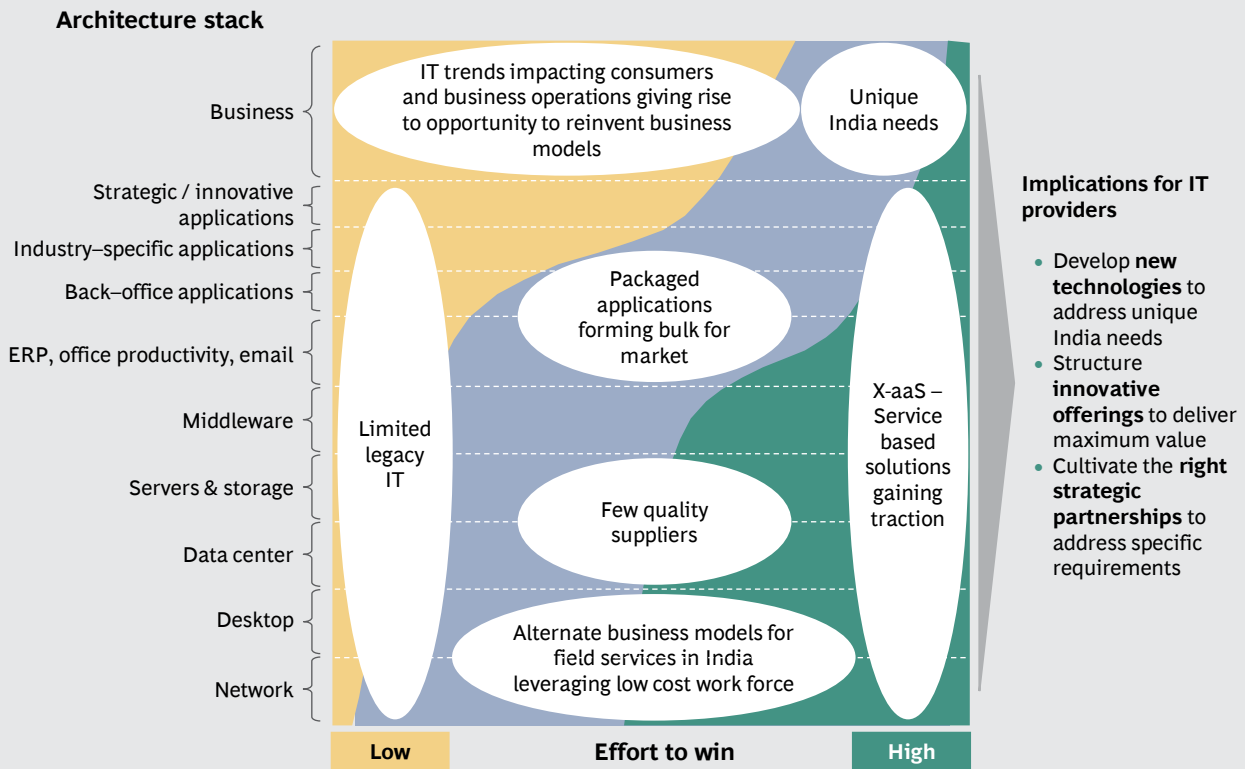
Matching solution costs with consumer willingness to pay is challenging if solutions are not customized to the level of functionality Indian companies need. Most global solutions will have bells and whistles that might not be relevant for Indian customers; right specifications can ensure lower costs as well. There is an opportunity for IT providers to de-engineer solutions in the context of Indian clients’ needs. Also, providing simpler options alongside complex offerings might help customers choose IT as per their needs. Some sectors, such as banking, might need specific customizations due to regulatory constraints.

An India-specific strategy, for example, can capitalize on the immense opportunity to leverage the use of highly penetrated mobile phones in rural India (as shown in Exhibit 5.5).

Structure innovative offerings to deliver maximum value

Companies in India increasingly expect their IT costs to be aligned with their business per-

EXHIBIT 5.4 | Key themes relevant for the IT stack in India that require IT providers to rethink their strategy



Sources: Global IT Management Benchmarking; BCG analysis.

formance, something that is evident in the growing trend of companies moving away from fixed price cost models to pricing mechanisms that are more closely linked to their business drivers. This is an opportunity for IT providers, as solid delivery on agreed outcomes will establish proof of concept and create customer loyalty. Pricing based on business drivers and outcomes would enable IT providers to bundle all the services relating to those drivers, and reduce supplier fragmentation and complexity of systems that is typically observed in piecemeal IT sourcing (as shown in Exhibit 5.6).

Providers will also need to understand the value their services create for customers. Combined with an accurate cost picture, this insight could let providers develop a value-based pricing mechanism that ensures adequate, even attractive, margins for themselves—while delivering variable, on-demand-type pricing for its customers. This element of predictive pricing is

still nascent for many IT providers, and there is a need to quickly develop capabilities in this area.

Cultivate the right partnerships

IT providers need to build platforms where components can be provided by best cost suppliers who need not be internal to them. For example, given their lower use of software in the legacy systems, Indian customers are more open to implementing packaged applications. Therefore, IT vendors will need to partner with the right ISVs to provide requisite solutions. Similarly, on-site field services, which are now increasingly commoditized, cannot be served by the high cost labour provided by traditional system integrators who charge heavily for these resources in global markets. Partnering with local players who leverage a low-skill workforce will help them control costs.

With the market evolving toward end-to-end deals, there would be additional pricing chal-

EXHIBIT 5.5 | Use of mobile phones is an opportunity for IT providers to de-engineer and make a real difference in rural areas

Dattatrey Bhong, 27 years
A farmer, India

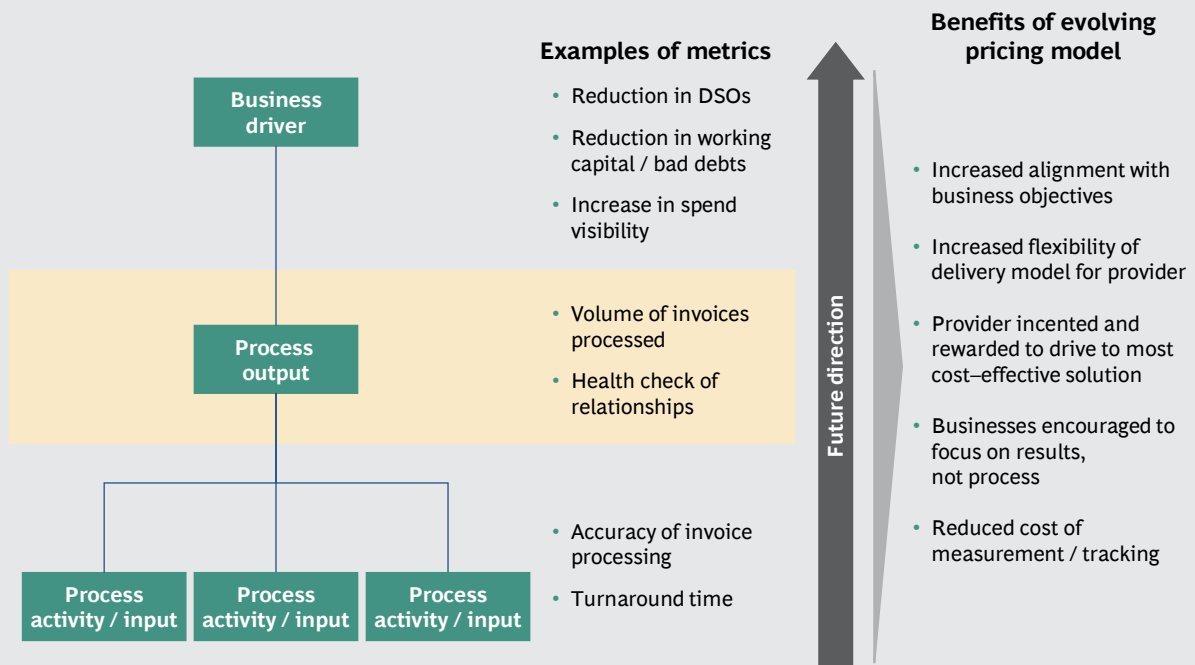
"I paid Rs. 3,500 for the phone. I can now get the crop prices directly from my handset and can choose which market to sell. I even managed to earn a profit of Rs. 6,500 using information provided by the service"

Narinjan Singh,
A fisherman, India

"I use my mobile phone to negotiate with buyers from my boat itself. Now I do not have to settle for whatever the wholesaler offers me — I know exactly how much buyers at the next port are willing to pay"

Sources: EPress search; BCG research (Next Billion Customers).

EXHIBIT 5.6 | Pricing will evolve to be differentiated, with an impact on the measured metrics



allenges due to the low-margin nature of the hardware elements involved in such deals. Leveraging partners specializing in this segment and using disruptive technologies such as cloud based platforms could be potential ways of addressing these challenges.

FOR IT PROVIDERS: OPTIMIZE DELIVERY MODEL FOR LOWER COSTS

To target outcome based contracts, providers will also need to aggressively manage their own supply chain, operating model, and strategic partnering / outsourcing of their activities.

Applying lean principles and establishing a continuous improvement process to optimize the delivery model would be required. IT providers can reduce complexity, embrace automation, and ensure standardization. Measuring productivity and focusing on removing the process “wastes” or non value adding activities can help. They can champion process excellence so that things get done right the first time to help reduce errors and re-work, further enhancing productivity. New technologies should be leveraged whenever they can boost efficiencies or cut costs.

However, the success of these programs is possible only by instilling a culture of lean and changing the mindsets of the workforce than by application of lean tools in a one-shot effort. IT providers can take inspiration from manufacturing companies who have embraced lean operations and explore ways to transplant lean ideas in their services environment.

Establishing tier 2 / 3 cities, leveraging contract labor, standardizing and automating processes can leverage less expensive workforce options and reduce overall cost of delivery. Segmenting activities to identifying high skill tasks that need expertise, separating them clearly from the basic tasks and mapping only these to experts will ensure that only high value adding tasks use expensive workforce.

Where possible, developing contracts based on usage or on just-in-time support from their equipment vendors and other suppliers, IT providers can mimic the risk profile of their revenues in their own cost structure. This will ensure that, when business ebbs,

costs decrease—just as it does for their customers in outcome based contracts.

FOR END USERS AND IT PROVIDERS: PARTNER STRATEGICALLY TO COLLECTIVELY TRANSFORM THE BUSINESS

Collaboration between IT providers and customers should be encouraged, and become an ongoing activity. Collaboration will help create faster, better ways to get the job done—and help strengthen relationships. Working with providers can help end users leverage IT more effectively, and align business needs and IT architecture. Five key attributes of a collaboration model between the IT provider and the customer are laid out in Exhibit 5.7.

Information sharing

A completely transparent exchange of business data between the IT provider and its customer is critical in identifying cost reduction and value generation opportunities for the client. IT providers, having complete access to usage patterns of end users, can leverage analytics to identify opportunities to streamline and eliminate redundant business processes, and to reduce service levels—while ensuring limited business impact. Vendors will also be able to spot opportunities where delivery model optimizations will become attractive or a streamlining of customers’ IT portfolios can lead to cost efficiencies.

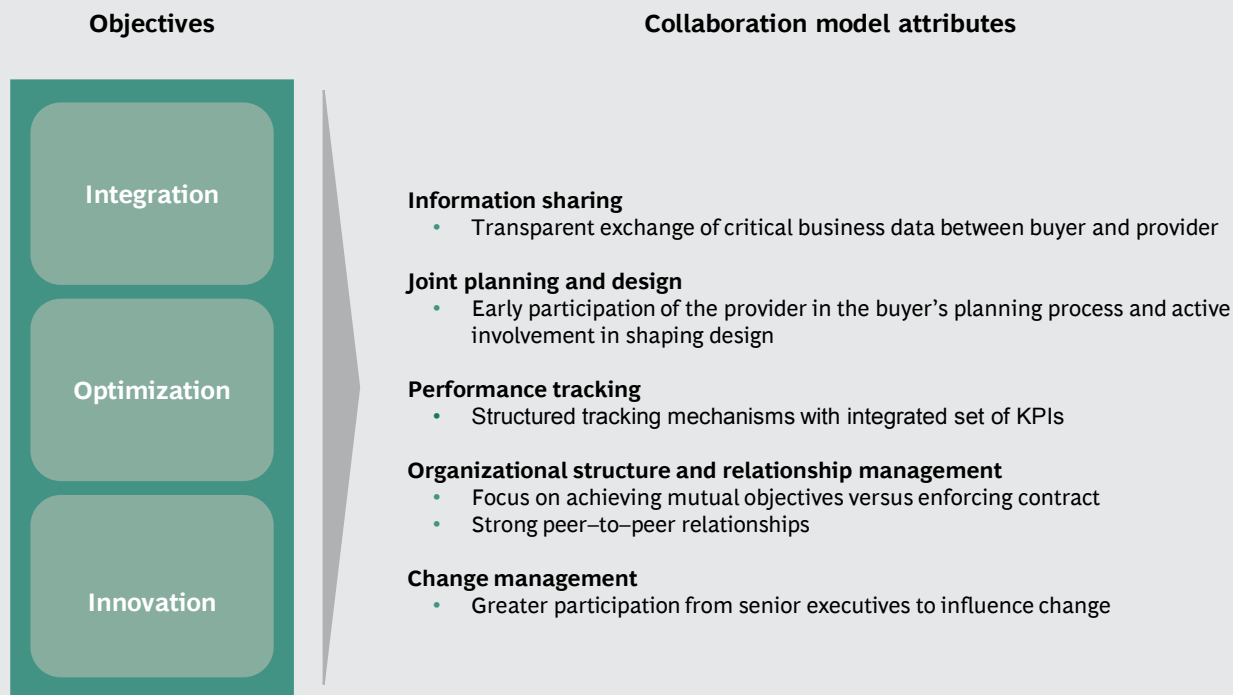
Joint planning and design

Joint planning sessions, involving key vendors, to discuss evolution of business needs, as well as joint performance reviews to assess the business impact of IT, can be a great way to ensure alignment on value creation. These sessions should also discuss new technologies and process optimization tools that the customer needs to consider. Plus, potential cost reduction opportunities arising out of technology evolution / commoditization should be on the agenda during such meetings. Customers and IT providers should also evaluate the change in asset ownership where it makes sense for example cloud model in hosting.

Performance tracking

Once the IT service provider is on-board, a comprehensive performance tracking mech-

EXHIBIT 5.7 | The collaboration between end users and IT providers will need to be enhanced



anism with a well-defined set of KPIs is critical. In case of multiple providers, it is the customers' responsibility to establish vendor relationships and manage the entire eco-system. Interdependencies often exist between and among outsourced functions, calling for a collaborative approach to problem solving. However, when each vendor is oriented solely toward his own tasks and SLAs, there is a possibility of cooperation failing to materialize. An integrated set of shared KPIs across vendors can align the interests of the vendors with the end users.

Organizational structure and relationship management

To ensure successful collaboration, it is essential to spell out the rules of engagement and the level of interaction—strategic, tactical and day-to-day. A clear escalation matrix needs to be defined which is geared towards greater empowerment at the middle management levels. Further, the project team at the client's end needs to have well-defined roles to facilitate strong peer-to-peer relationships between the customer and the IT provider. This will ensure focus

on achieving mutual business objectives, rather than simply enforcing the terms of the contract.

Change management

Any IT transformation will bring about significant changes in the way organizations function in terms of their systems and processes work. In such a scenario, it is imperative to have a robust change management process. Greater participation from senior level executives will have a strong influence on the lower levels while leading and managing change.

An example of successful collaboration between the end user and an IT provider is the deployment of the surveillance networking system for the Delhi Duty Free by Cisco.

FOR GOVERNMENT: FACILITATE IT ADOPTION THROUGH POLICIES, PROGRAMS AND INCENTIVES

Government programs to increase IT adoption

Governments can play a critical role in helping increase the usage of IT by companies with low adoption of such solutions. Policy makers can support businesses through structured pro-

CASE STUDY: SURVEILLANCE NETWORKING FOR DELHI DUTY FREE

Most of the retail outlets at the T3 Terminal of Delhi's Indira Gandhi Airport are managed by Delhi Duty Free Services Private Limited (DDFS). These shops operate 24x7, stocking more than 15,000 SKUs of liquor, tobacco, fragrance, cosmetics, confectionary, etc.

While operating a set up of this nature has its challenges, one of the potential issues DDFS anticipated was shoplifting and theft, based on the experience of retailers worldwide. Hence, they wanted to deploy a surveillance system.

While Cisco used its suite of products and solutions like the Cisco LAN, Cisco Unified Communications, Cisco Unified Wireless, Cisco Video Surveillance and Cisco Physical Access Management solutions, the real challenge was to design a solution based on the client's specific needs.

- The Planning, Design and Implementation were done according to the inputs gathered in the Customer Requirement Definition workshop

- The system needed to operate with zero downtime and provide high scalability, in case of future expansions by DDFS
- The solution had to be integrated with the primary airport network that included numerous legacy systems
- There was a stringent delivery deadline of two months, with the need to work in a highly secure location

Cisco came up with a client-specific solution, designing and delivering around the given constraints. While the system is designed to prevent thefts, it is also aligned with the retail chain's business objectives. The system provides high-quality video that enables stores to track and validate sales against the footage. It also offers business intelligence that allows DDFS to analyze customer trends, modify store topology, present high-value goods more effectively, and formulate marketing strategies to boost sales.

Source: Cisco.

grams and trainings, and also hand-holding them through the initial phases of adoption of a new technology. The Hong Kong (HK) Government's initiative to support SMEs in increasing their IT adoption is a great example.

Level playing field in the context of taxes

India's current taxation structure does not incentivize IT providers to place a disproportionate focus on the domestic market. While IT exports receive significant subsidies, and are tax free, domestic sales are taxed, making it unattractive for providers to seek to increase their local sales. The Government should explore tax holidays and subsidies for IT sales in the domestic market as well, to ensure tax equalization on exports and domestic sales, in order to support smaller companies.

Currently, there is a lack of clarity as far as service tax laws for integrated deals involving both

hardware and service components are concerned. Due to the absence of a clear definition of the buckets on which service tax is applicable in such contracts, deductions end up getting applied to earnings from hardware as well.

FOR GOVERNMENT: FACILITATE DEVELOPMENT OF QUALITY IT WORKFORCE

A skilled IT workforce has been the biggest factor behind the IT industry's growth in India. While the country produces 4.35 million graduates each year—a figure growing at the rate of 12 percent annually—more than 75 percent of them are not suitable to be directly employed in the IT sector¹.

Recognizing the need to make this pool more “ready-to-hire”, the Government has already undertaken many initiatives—the aim being to promote IT know-how at the grass-roots level. To build capability in students and fac-

ulty, various broad education-based programs like IT finishing schools and industry-academia faculty membership program have been initiated. Also, schemes like NAC (Nasscom Assessment of Competence) have been implemented to attest and certify talent pool. Moreover, the Government has established regulatory bodies like National Skills Development Council of India (NSDC) and All India Council for Technical Education (AICTE).

In order to meet industry demand for a steady flow of ready-to-hire talent, the Government needs to continue making strategic investments in the education sector—through subsidies on IT capital investment by schools and technical educational institutions, and IT training programs for faculty and students.

To boost the education sector in India, authorities also need to formulate favorable policies such as providing organizations with tax

subsidies for investments in IT skill-related training, as well as tax breaks on capital investments in installed IT equipment.

PARTNER WITH INDUSTRY TO LEVERAGE CUTTING-EDGE IT, FOSTER INNOVATION

In order to be able to meet the continuously increasing expectations of citizens for delivery of quality services, it is imperative for the Government to leverage emerging technologies to develop new delivery models and boost the efficiencies of existing resources. Just as private companies are partnering with IT providers to bridge their capability gaps, the Government also needs to collaborate with vendors to leverage IT effectively. It, too, needs to develop IT management capabilities, and “orchestrate” the myriad IT projects, with an objective to eliminate delays and cost overruns and maximize the value of its IT investments.

The Government can also play a major role in mandating and facilitating development of

CASE STUDY: HONG KONG GOVERNMENT’S SUPPORT PROGRAM FOR SMEs

A majority of businesses in Hong Kong are SMEs, and hence, Hong Kong’s development as a digital economy depends on the extent of IT adoption by SMEs. The Government and the IT industry have come together to facilitate this. Two types of programs have been undertaken over the last eight years in this regard:

IT Training Program for SMEs (ITTP)

This program, launched in 2009, comprised six training projects tailored to meet the requirements of five different sectors—travel industry, Chinese medicine practitioners, social enterprises, manufacturing industry, and general SMEs.

Sector-specific program (SSP)

The objective of the SSP is to increase e-readiness of SMEs that have yet to achieve a basic level of IT adoption, thus preparing them for more advanced e-business opportunities. Since 2004, the OGCIO (Office of the Government Chief Information Officer) has successfully completed 14

projects across ten sectors—travel agencies, medical and health, drugstores, logistics, accounting, beauty service, trade, watches and clocks, social service, and supply chain.

The projects focused on:

- IT skill training for SMEs
- Developing websites, portals or application modules to improve operational efficiency, and enhancing the experience provided to customers

These programs were successfully completed, achieving target outcomes such as high participation and satisfaction rating for training, and successful implementation of the systems / websites / portals concerned.

Source: Official website, Office of the Government Chief Information Officer, Hong Kong.

data and information standards across industries. This will catalyze information sharing, which is likely to improve efficiencies across verticals. For example, in the automotive sector, manufacturers deal with multiple vendors—a majority of whom are common between the OEMs. These manufacturers and vendors share data on various aspects—such as purchase orders, invoices, etc.—on a continuous basis for effective workflow management. However, currently, there is no standard format for such documents. SIAM is working on a project to define industry-level standards for data sharing among manufacturers and vendors, in order to ensure improved efficiencies and lower costs.

Governments can foster an enabling environment by implementing policies that promote

R&D and innovation in new emerging IT, as well as by leveraging cutting-edge IT in their social sector programs. Policy makers also can provide fiscal benefits to SMEs and start-ups to make a viable business case for IT implementation. To encourage innovation, the Government can create and implement laws for protection of intellectual property rights, copyrights and patents. The E.U., for example, has released a detailed strategy for cloud computing, addressing the uncertainties arising from the issue of data protection and retention, liability and consumer protection. The E.U.'s approach simplifies the multiple technical standards surrounding cloud, implements E.U.-wide certification schemes for cloud providers, develops model contract terms including SLAs, and launches a European Cloud Partnership to harness the public

HOW CAN THE GOVERNMENT HELP PROMOTE THE ADOPTION OF CUTTING-EDGE IT? CLOUD AS AN EXAMPLE.

The Government could play an active role in identifying and assessing risks and opportunities for emerging IT technologies such as cloud. The following steps can serve as a roadmap for the Government to formulate a strategy to promote cloud computing in India.

Identifying customers and increasing awareness

The Government can identify the sectors with the highest potential impact of the new technology (for example retail trade, culture industry and tourism, food industry, sustainable energy management), and also attempt to quantify the impact. Following this, it can create programs to raise awareness among companies and industry groups operating in the sector, through forums and events.

Encouraging IT providers

A structured program to encourage local IT companies to serve as partners in implementation of cloud platforms could be explored. The Government can encourage vendors who sell cloud solutions and

vendors who offer technical support in cloud services and products.

Incenting adoption

The incentive-based model oriented to adaption of cloud will need to integrate three types of elements:

- Non-economic incentives like free promotion and visibility of success stories
- Indirect economic incentives such as access to shared physical resources, tax allowances, and preferential credit lines
- Direct economic incentives like sharing investments or offering incentives in success story contests

Driving adoption as customer

The Government can make a concerted effort to drive uptake by adopting cloud in its own processes and operations. This would serve as an example for the private sector, and also help IT providers achieve scale in operations.

sector's buying power in e-governance to boost the cloud market and help cloud providers achieve scale². A study estimates a benefit of €250 billion to the E.U. economy by 2020 through a policy-driven approach toward cloud³.

The Indian Government's National Policy on Information Technology 2012 is a step towards providing impetus to IT adoption. Regulators of certain sectors like the RBI and IRDA, have also released policy guidelines regarding the extent of outsourcing. However, there is ample scope to improve the existing policy guidelines, and increase their coverage, while implementing an overarching strategy spanning multiple sectors that endeavors to resolve uncertainties and fill gaps in the understanding and usage of IT. Similarly, the Indian Government must take the onus of promoting new and emerging technologies, by implementing appropriate policy steps.

The eight point action plan captures key imperatives for all stakeholders in the IT ecosystem—the customers, IT providers and the

Government. The customers need to focus on strengthening their IT capabilities, while working closely with IT providers to define their IT architecture and identify value generating opportunities. IT providers need to customize their portfolio to address unique Indian needs and optimize their delivery model for lower costs. The Government needs to support IT adoption and give an impetus to the industry by facilitating quality IT workforce, while partnering with the private sector to develop standards and copyrights. Driving all these actions in close concert can have a leap-frog effect on the domestic IT industry.

NOTE

1. Nasscom Strategic Review—2012, “The IT-BPO Sector in India”.

2. European Commission Report, “Unleashing the Potential of Cloud Computing in Europe”, September 2012.

3. IDC Report, “Removing Barriers to Cloud Computing in Europe Through Policy Action Could Generate up to €250Bn EU GDP Growth in 2020”, October 2012.

Effective IT adoption by Indian companies will be key to realizing India's GDP growth potential. It will improve labour productivity, generate employment opportunities, and help improve employability of labour in India.

To successfully leverage this opportunity, a concerted effort is required by end users, IT providers and the Government. With a renewed thrust, the Indian IT industry can sustain the expected growth rates, and garner a far larger share in the portfolios of its home grown companies.

FOR FURTHER READING

The Boston Consulting Group publishes other reports and articles on related topics that may be of interest to senior executives. Recent examples include:

Unleashing the Value of Consumer Data

An article by The Boston Consulting Group, January 2013

Re-igniting India's Quest for Manufacturing Leadership

A report by The Boston Consulting Group in association with The Confederation of Indian Industry (CII), December 2012

Transforming the Business Model for IT Services

An article by The Boston Consulting Group, November 2012

IT Advantage, Fall 2012

A report by The Boston Consulting Group, September 2012

Information Strategy for Value-Based Health Care

An article by The Boston Consulting Group, August 2012

CIOs and Cloud Computing—A Relationship Revisited

An article by The Boston Consulting Group, June 2012

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A report by The Boston Consulting Group, March 2012

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A White Paper by The Boston Consulting Group in association with The Confederation of Indian Industry (CII), December 2011

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A report by The Boston Consulting Group in association with The Confederation of Indian Industry (CII), February 2011

Life Sciences R&D: Changing The Innovation Equation In India—Delivering Affordable Innovation Through Global Partnerships

A Position Paper commissioned by the USA–India Chamber of Commerce (USAIC) and prepared by the Boston Consulting Group, 2011

Digital India—The \$ 100 Billion Prize

A White Paper by the Boston Consulting Group, January 2011

From 5 Star to 7 Star in Productivity—Excellence in Banking with Customer and Employee Centricity, September 2012

Indian Banking 2020: Making the Decade's Promise Come True

A report by The Boston Consulting Group, September 2010

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