

**Non-Linear Revenue Creating Business Platform for IT Service
Companies Using Cloud Computing**

By

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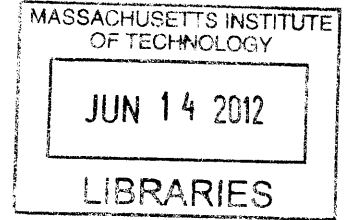
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ABSTRACT

The Indian Information Technology (IT) & Business process outsourcing (BPO) companies are going through an inflection point. They have been growing revenue by over 20% on a yearly basis for the last decade. This revenue growth has been fueled by a proportionate increase in employee headcount. Their ability to maintain the growth rate is in question, partly due to the difficulty in increasing the headcount and partly due to competition from multinational IT Service companies growing their business in India. In order to continue to grow, the Indian IT companies need to change their business model and look for nonlinear revenue growth, which is independent of the resource deployed or effort spent.

Cloud computing provides a new strategic option for growth for the Indian IT-BPO companies. This thesis looks into Business Service Platform based on cloud computing and how the IT companies can leverage it to generate nonlinear revenue. It also explores ways to implement the business platform, along with risks and challenges involved. The IT companies would need to change their current sales and marketing process, along with talent recruitment guidelines and training content in order to successfully roll out the platforms, on which its future growth is dependent.

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Chapter 1: Introduction

The Indian Information Technology (IT) & Business process outsourcing (BPO) industry is one of the success stories of the modern times. From a nascent stage in the late 1980s, the industry has grown tremendous during the 1990s and onwards. It has grown over 100 times in the last 15 years, contributing significantly to India's economic progress. The Indian IT-BPO industry is at an inflection point in its evolution as its ability to maintain the future growth rate is being questioned.

The increase in revenue has been significantly driven by increase in employee headcount. The revenue model has largely been linear, i.e. for every percentage point growth in revenue, the employee headcount should increase by a similar percentage. In order to ensure the continued growth in double digits as expected by the stock market, the employee strength needs to grow exponentially.

The major players in the IT-BPO industry, namely, Infosys, Tata Consulting Services (TCS) and Wipro, have over half a million employees combined. Their Headcount increase will slow down due to the "law of large numbers¹", impacting the revenue targets.

For the IT-BPO industry to continue its growth story into the next decade, new business models need to be explored in order to deal with a rapidly changing marketplace and customer needs. The companies have been unable to create a non-linear business model, the model that is not dependent on increase in employee count. They have moved from the model of staff augmentation to providing end to end consulting services and have been reluctant to enter into the Product space, either due to lack of skill set or due to the capital expenditure and the risk involved.

¹ Investopedia.com explanation of 'Law Of Large Numbers'
<http://www.investopedia.com/terms/l/lawoflargenumbers.asp#axzz1r9GE6Qn6>

A new wave of changes in the technology space, from increased mobility to virtualization and cloud computing, has provided the companies an opportunity to move away from rigid revenue-employee headcount correlation and to create a non-linear revenue model.

This thesis examines the Indian IT-BPO companies and finds that the revenue growth is dependent on the increase of headcount. It focuses on possible non-linear growth model for these companies. It defines Cloud Computing and Business Service Platforms that can be created, by focusing on the offerings from the Indian IT-BPO companies. Finally, it will provide suggestions for using Business Service Platforms and the risks and challenges associated with them.

The future growth in the Indian IT-BPO companies will be dependent on the way they can utilize their existing skillsets (both domain and human capital) and their ability to successfully implement the new non-linear growth business model, for which Business Service Platforms through Cloud Computing is an option.

Chapter 2: Indian IT-BPO Service Companies – Headcount Trap

According to NASSCOM², a trade association of the Indian IT-BPO industry, the Indian IT industry has grown from \$159M in 1990 to \$88.1B in 2011, with export contributing approximately \$59B. India is the most preferred offshore destination. It has been able to innovate, focus on cost efficiencies, customer values, and managed to scale up by expanding to new markets.

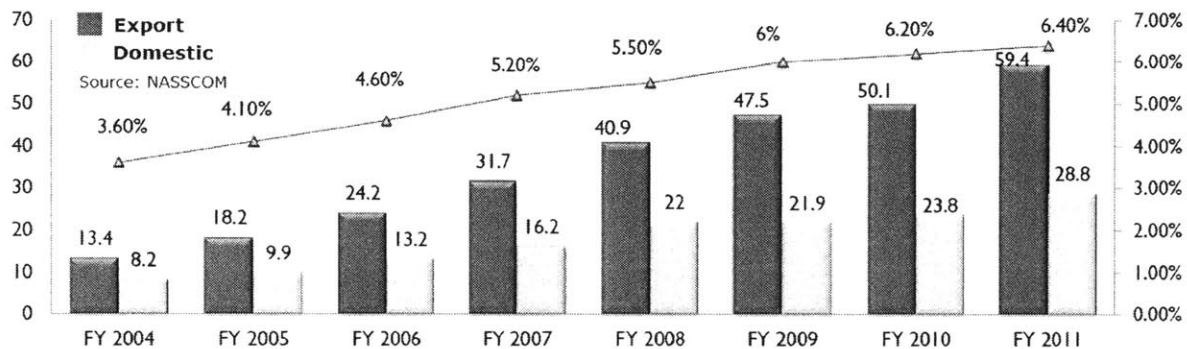


Figure 1: Indian IT-BPO Sector: Revenue Aggregate & Share of GDP

In the past 6 years, India's off-shoring industry has grown at a CAGR of 22% and is expected to grow at a CAGR of ~13-20% through to 2020 depending on the level of initiatives and innovations³.

India's IT services companies have had a golden age. Over the past decade the industry has achieved growth, as businesses from banks to the manufacturers in Europe and North America have shifted their routine back-office tasks and IT functions to India's talented, low-cost workers.

² <http://www.nasscom.org/>

³ NASSCOM The IT - BPO Sector in India – Strategic Review 2011

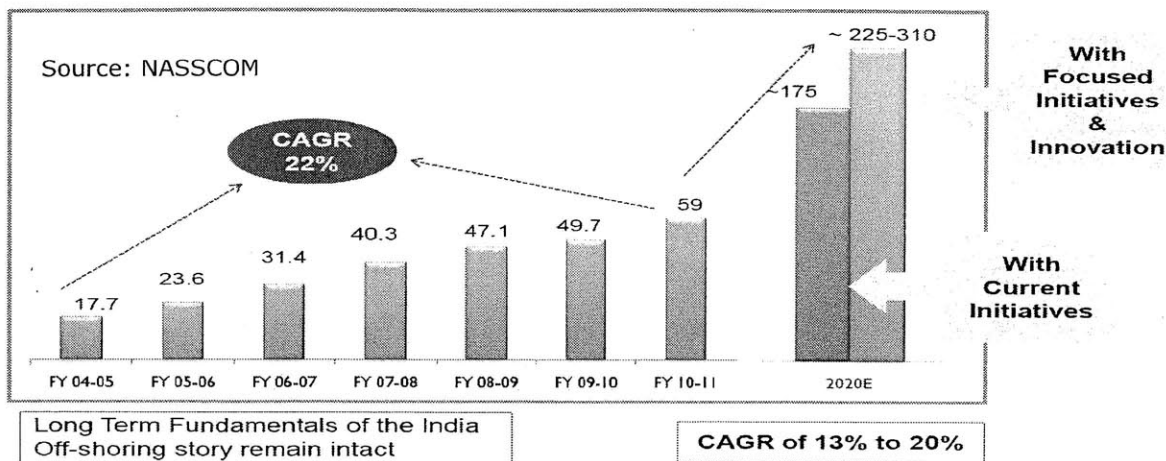


Figure 2: India's offshore IT and BPO exports (\$B)

The top three IT services companies—Infosys Technologies, TCS, and Wipro Technologies—have evolved rapidly into established players, each with annual revenues of above \$6 billion.

Competition is increasing with major Global IT services companies such as Accenture, HP, and IBM as they enhance their presence in India through acquisitions and accelerated hiring. The Indian IT industry is also facing competition from other low wage countries in Eastern Europe, Philippines and China. Its main market, the industrialized nations, is facing an economic downturn. These countries are facing high unemployment and outsourcing has become a major political issue. Getting work visas have become difficult in most of these countries.

Indian companies themselves are confronting a looming shortage of skilled workers. Due to increased competition for offshoring contracts as multi-national companies enter the market, Indian IT-BPO companies are under tremendous pressure to improve both its workforce and transform their business model.

Linear Growth Model & Revenue/Resource Correlation

From quarter ending 31st March 2007 to quarter ending 31st Dec 2011, Infosys’s revenue has grown at a CAGR of 16.82% while its employee headcount has grown at 15.82%. Figure 3 indicates how the revenue and employee headcount growth for Infosys have been intertwined. If not for the economic downturn in 2008-2009, these two would virtually overlap.

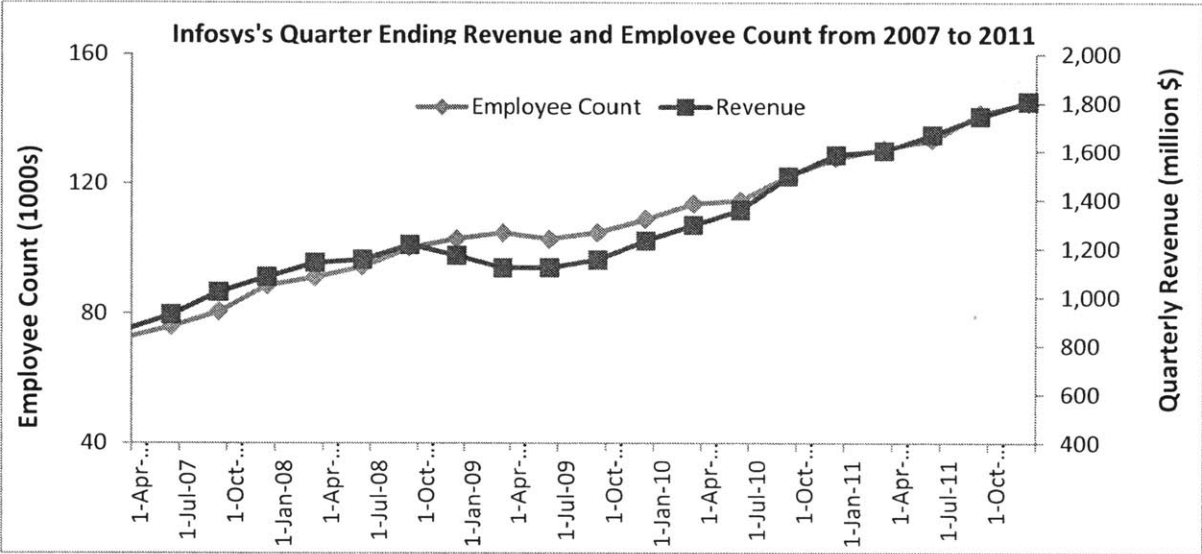


Figure 3: Infosys Revenue and Employee Count

Figure 4 shows the correlation between the revenue and employee headcount for Infosys during the same period. The “R²” of the correlation is a very high 0.946. If the data for the 4 quarters from June 2008 to March 2009 are removed, the correlation increases even further to a value of almost 0.99.

From quarter ending 31st March 2007 to quarter ending 31st Dec 2011, TCS’s revenue has grown at a CAGR of 17.64% while its employee headcount has grown at a faster rate of 21.64%. Figure 5 indicates the

revenue and employee headcount growth for TCS and shows a similar pattern as one for Infosys.

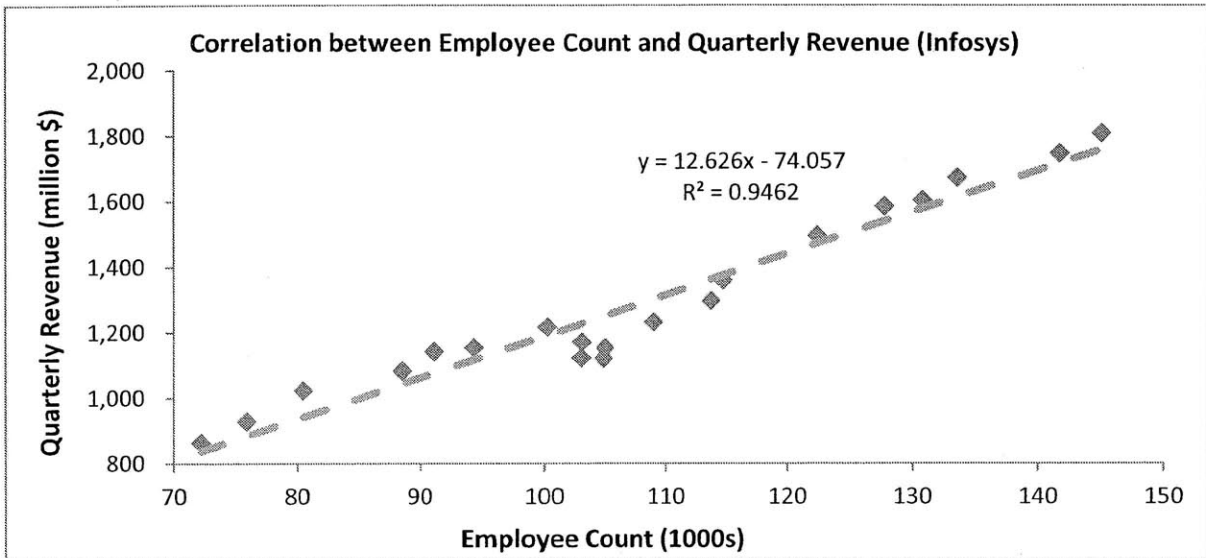


Figure 4: Employee Count and Revenue Correlation (Infosys)

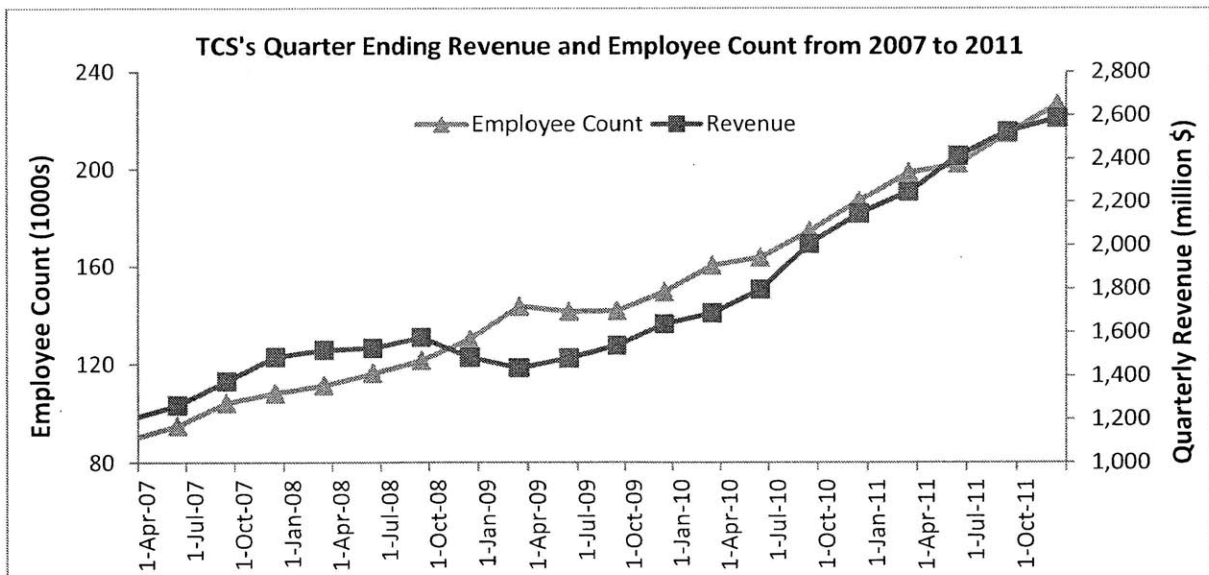


Figure 5: TCS's Revenue and Employee Count

Figure 6 shows the correlation between the revenue and employee headcount for TCS during the same period. The “ R^2 ” of the correlation is a very high 0.913. Indifference performance during the economic downturn of 2008-2009 when the revenue growth wasn’t able to catch up with the employee increase led to the lowest “ R^2 ” among the three major companies.

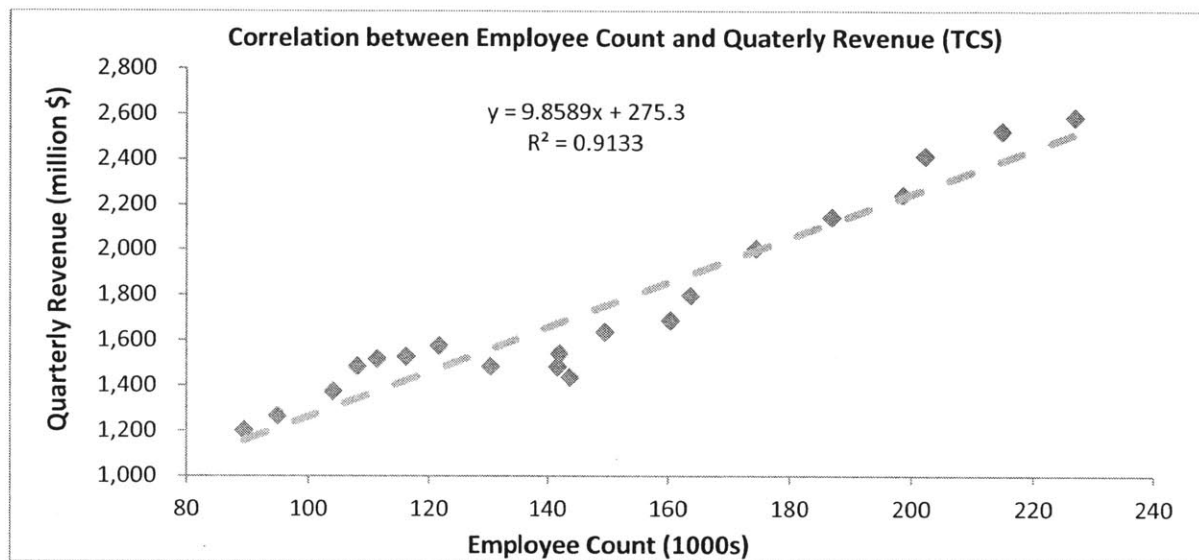


Figure 6: Employee Count and Revenue Correlation (TCS)

From Quarter ending 31st March 2007 to quarter ending 31st Dec 2011, Wipro’s revenue has grown at a CAGR of 17.28% while its employee headcount grew at a modest 15.91%.

Figure 7 indicates the revenue and employee headcount growth for Wipro and shows similar pattern to its two larger competitors. Figure 8 shows the correlation between the revenue and employee headcount for Wipro during the same period. The “ R^2 ” of the correlation is a very high 0.986, highest among the three companies. The data shows that Wipro was able to deal with the economic downturn in a much better way which again led to a very high “ R^2 ”.

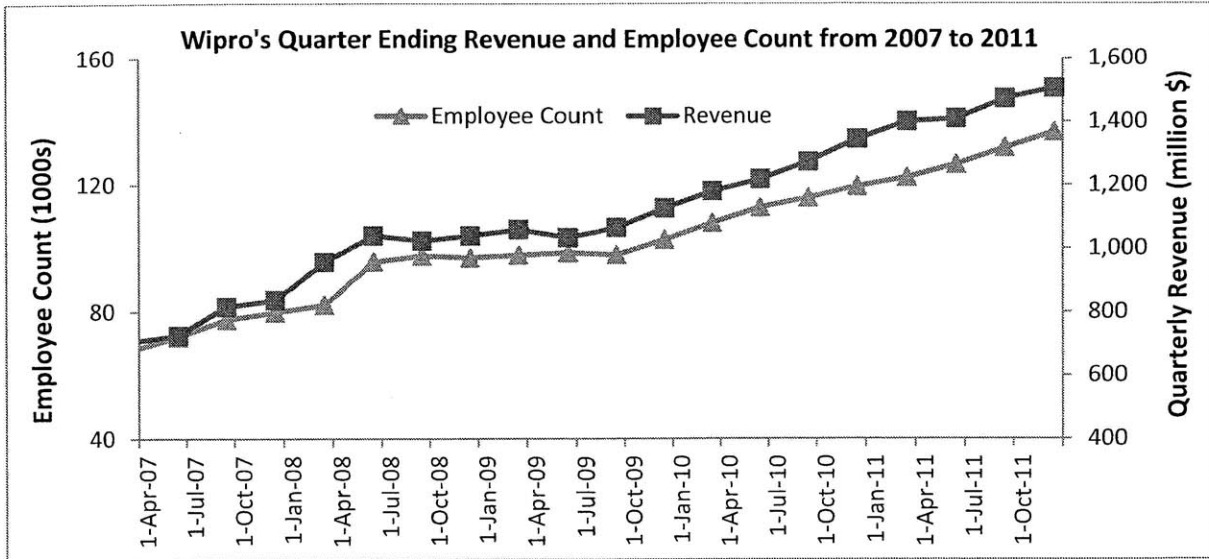


Figure 7: Wipro's Revenue and Employee Count

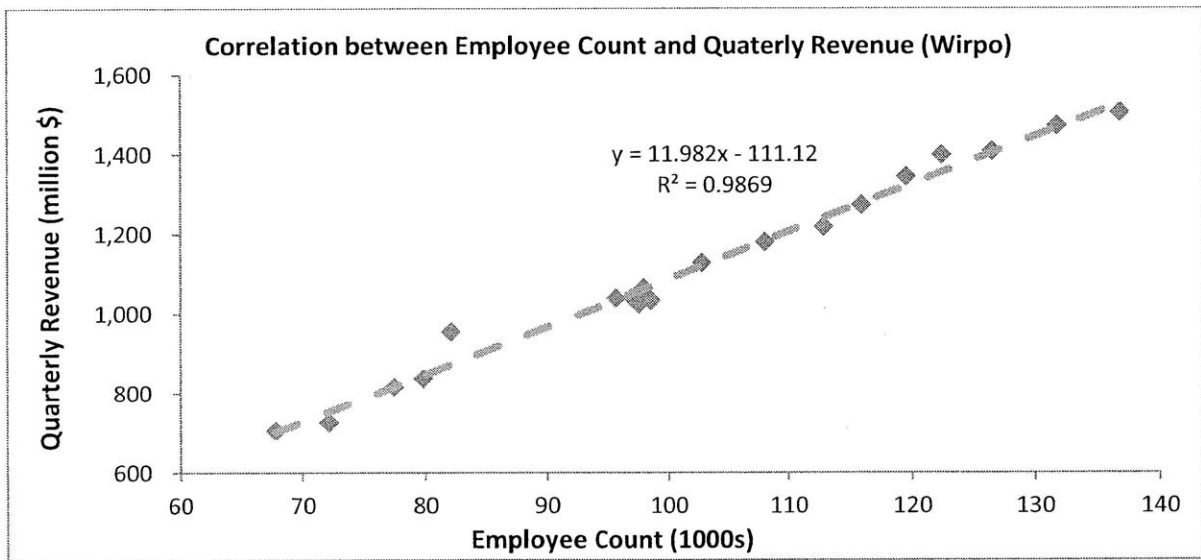


Figure 8: Employee Count and Revenue Correlation (Wipro)

According to Morgan Stanley Research paper "Global IT Services – Per Employee Metrics are Key to Quality of Growth"⁴, published in September

⁴ Morgan Stanley Research Paper titles "Global IT Services – Per Employee Metrics are Key to Quality of Growth"
<http://www.morganstanleychina.com/conferences/apsummit2011/research/30GlobalITServices.pdf>

2011, Infosys, TCS and Wipro have reported decrease of 13%, 23% and 30%, respectively, in revenue per employee from their historical peak levels around 2004-2005 to financial year 2011.

Figure 9 shows the average monthly revenue per employee for the three companies. Increase in billing pressure due to competition and commoditization of the industry will have a negative impact on revenue per employee. The companies would need to differentiate themselves in order to continue their growth.

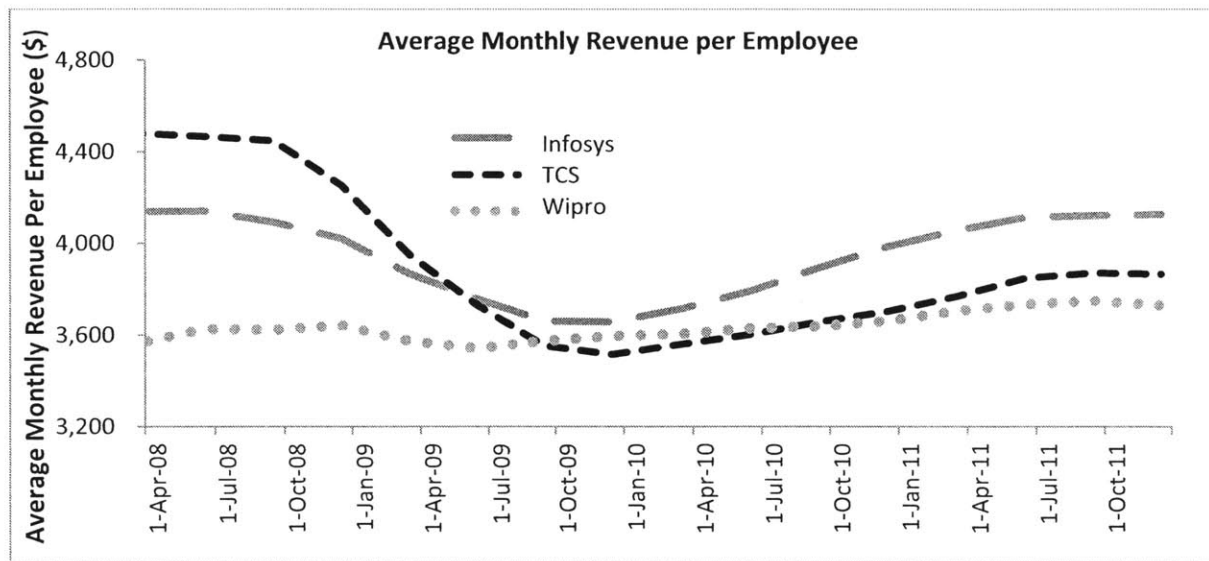


Figure 9: Average Monthly Revenue per Employee

The industry must become less dependent on time and material based contracts, which form the traditional relationship of labor arbitrage.

Figure 10 show that Infosys’s net income per employee has gradually declining over the last decade, despite the best effort of the company to

control cost. The net income per employee has fallen by 25% from 2002 to 2011⁵.

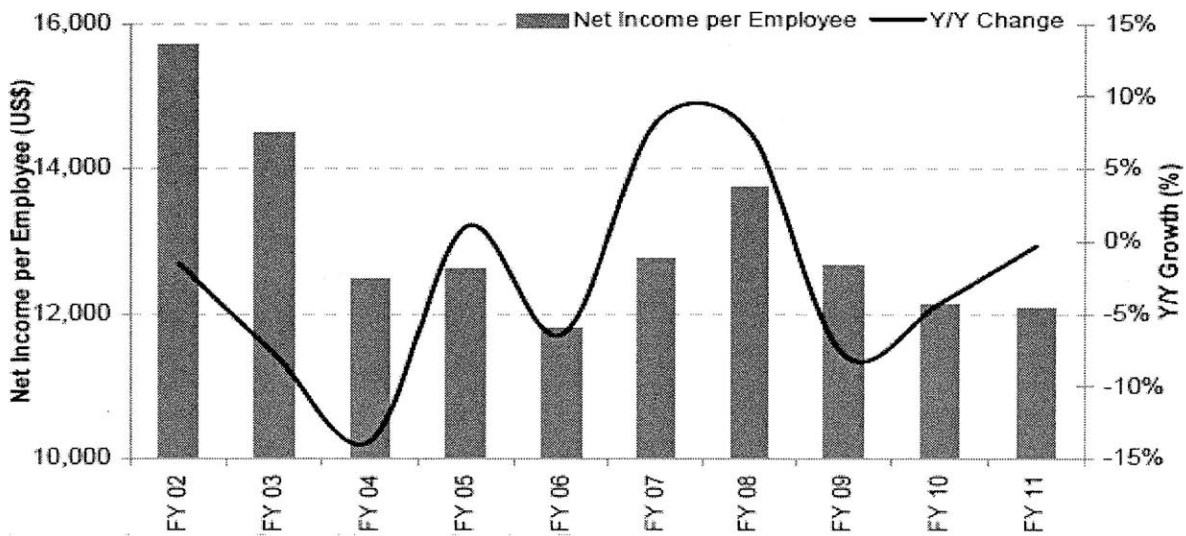


Figure 10: Infosys Net Income per Employee

The companies should focus their investment and innovation efforts in developing the Value Realization (VR) method in order to generate revenue from an outcome-based service. Sustainable development, enterprise mobility, and Cloud offerings through innovative business models can help create a “non-linear” revenue growth model.

⁵ Morgan Stanley Research Paper titled “Global IT Services – Per Employee Metrics are Key to Quality of Growth”
<http://www.morganstanleychina.com/conferences/apsummit2011/research/30GlobalITServices.pdf>

Chapter 3: Non-linear Growth Models for IT-BPO Companies

The Indian software industry needs to move away from delivering on cost arbitrage to its customers and to delivering business values and outcomes to them, by exploring different avenues of non-linearity.

Non-linear model can be achieved through multiple methods. It can be done by creating Intellectual Property (IP), products, and platforms or by exploring different pricing mechanisms. While increasing effort on branding can have incremental effect, Merger & Acquisitions (M&A) or combining business service through the cloud computing would provide a disruptive model for non-linear revenue.

The top 3 Indian IT-BPO companies have around half million employees. In order to generate a growth rate of 20%, the employee count would also increase in a similar proportion, reaching over a million within the next four years. Management of a large workforce would bring in additional challenges, such as diverting company's focus from maintaining revenue growth.

A move to non-linearity is necessary in order to sustain the current growth trajectory. A few primary models through which IT-BPO companies can redefine their services in their endeavor to deliver value to clients and help move to nonlinear revenue creation are discussed below.

- **Intellectual Property:**

Indian software product companies have been relegated to the background by their services counterpart. The Indian software product industry has grown from just over hundred million dollar in the year 2000 to

about USD 2 billion in 2011. Further, it is expected to reach 9.5-12 Billion USD by 2015⁶.

The large Indian IT major companies have been developing and acquiring IPs in the areas of banking, financial services and insurance segment. It has been observed that companies focusing on IP/products generally demonstrate higher revenue growth with a significantly lower employee growth rate.

- Cloud Computing

Industry research estimates double digits growth of Cloud related spending over next several years. At present most Indian IT companies are engaged in third-party implementations and cloud migration services, which are not different from their traditional outsourcing model.

The ability to cater to multiple customers through a single delivery platform makes Cloud an attractive investment for the service providers in the long term. Companies need to make initial investments, in creating the platforms along with increased efforts in sales and marketing.

As shown in the Figure 11⁷, the margin could be low or even negative in the initial years, due to relatively high sales and marketing cost, high customer acquisition costs, slow customer acquisition, and customer churn. Companies' ability to show case business values would make it attractive to customers to join the platform.

After the initial years of investment, margins would improve as revenue crosses a threshold. It will also increase the customer stickiness and an annuity of predictable subscription services.

⁶ Nasscom -Zinnov study on India Software Product Business, August, 2008

⁷ JP Morgan, India IT Services, 15 December 2010

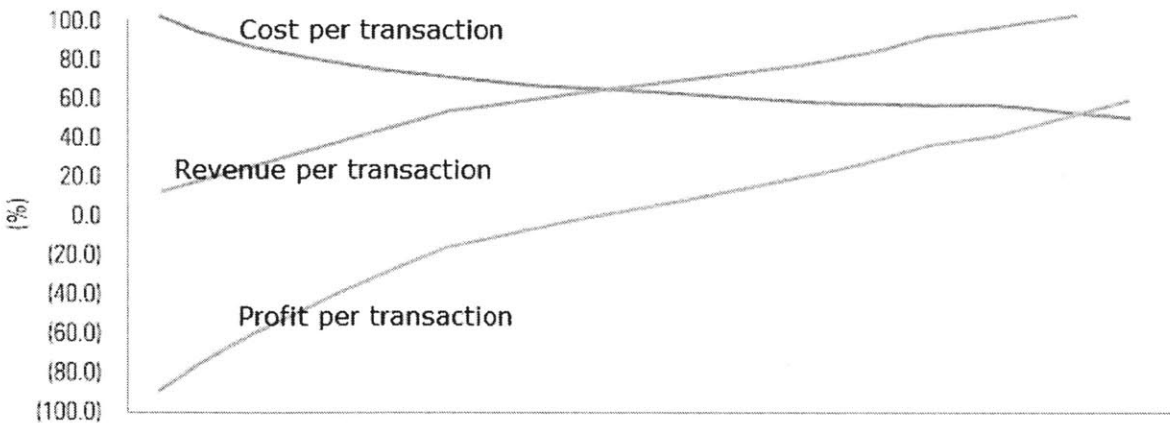


Figure 11: Profit per Transaction for Cloud Based Platform

- Platform BPO

Indian IT-BPO companies can move to Platform based BPO solutions by providing technology, consulting and service based on transaction and process-centric delivery model. They can offer an entire suite of services over a common business platform, providing them the ability to easily scale up, optimize costs, and improve process performance for their clients.

Similar to Cloud Computing option, platform BPO would impact the operating margin initially but with an increased customer base, it also provides an opportunity for rapid revenue growth. The platform BPO allows service providers to de-linearize growth through standardization and large-scale productivity payoffs.

- Non-linear Pricing Models

Time and Material (T&M) and Fixed Price (FP) models are linked to headcount and effort spent. Non-linear pricing models on the other hand, link revenue to business outcomes or usage, paving a way to non-linear revenue.

Outcome based models cover service offerings like products, consulting, infrastructure management and customization. Non-linear pricing models result in higher revenue productivity per employee and thus, improved margins for companies.

- Value Realization Method

Software is an investment that cannot be measured in terms of cost until it is successfully deployed and used.

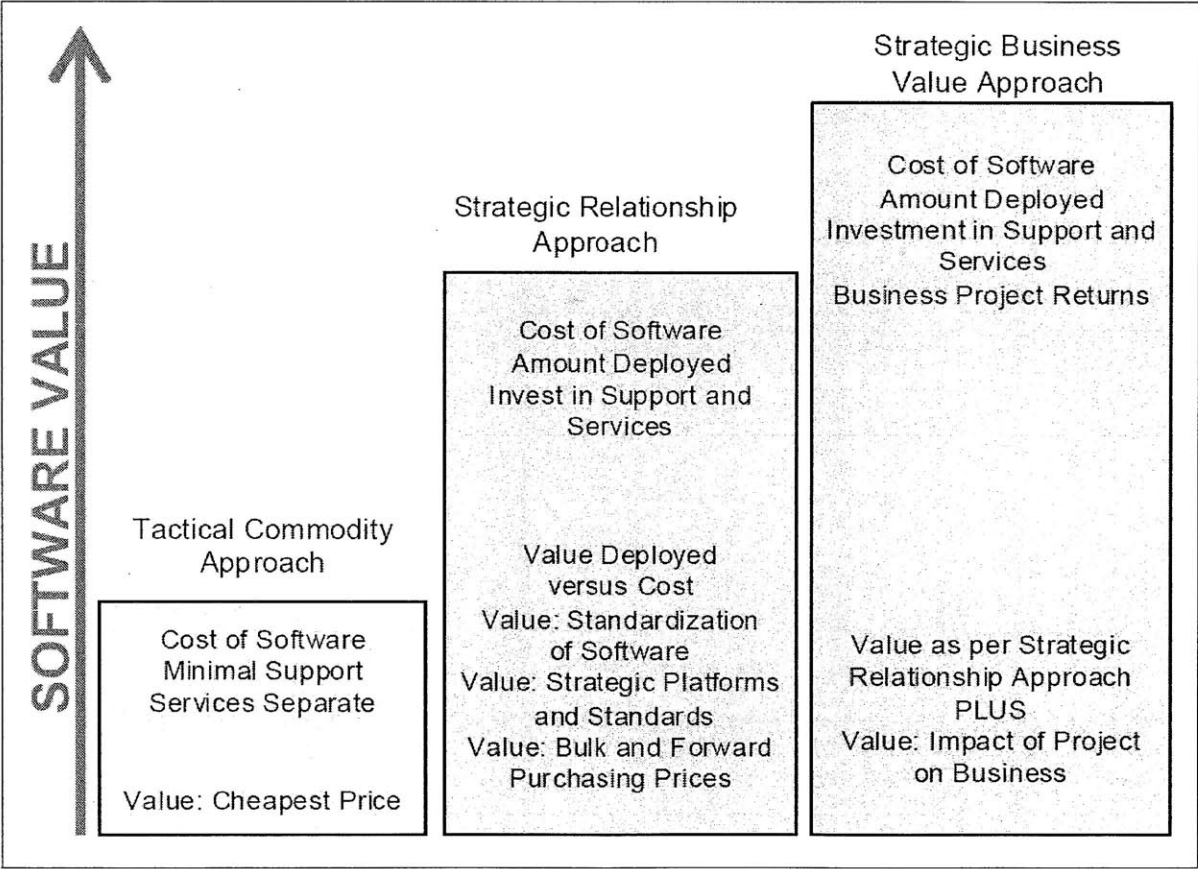


Figure 12: Approaches to Value Realization Method

The typical approach to measure the value from software is shown in figure 12⁸. The strategic business value approach has a greater success in obtaining positive outcome from software as the customer achieves greater value.

The Indian IT companies should be able to quantify the value realized. They should be able to structure the engagement by targeting a percentage of the value generated. The upfront cost for creating and implementing the software/project can be shared between the customer and the vendor.

Although there is an additional risk undertaken by the IT companies, the upside in revenue generated from successfully implementing is very large. Moreover, the final revenue is not related to the effort spent but on the value derived for the customer.

- Branding

A strong brand identity by showcasing critical elements that may attract customer will enable the IT companies to increase their brand perception, augment profitability and ultimately contribute in their nonlinear growth strategy.

A comprehensive, integrated brand strategy is needed to ensure success in the marketplace. Companies should focus on developing a solid business model that delivers on the brand promises and brand values. It will be effective when it is perceived to offer a real benefit for its customer.

- Mergers and Acquisitions

M&A has been a strategic growth engine for firms, helping them take the inorganic route for non-linear growth. The big 3 Indian IT-BPO

⁸ IBM Redbook - Value Realization from Efficient Software Deployment

companies have over \$6B in cash reserve on their balance sheet. The current economic conditions are conducive for consolidation as small and mid-sized players are struggling for sustenance.

The companies can look into M&A for IP and technology assets, enterprise mobility, ERP Platforms, niche capabilities for capturing the complete Value Chain.

Chapter 4: Cloud Computing and Business Platform

Cloud Computing: Technology Driven Transformation

The National Institute of Standards and Technology (NIST) defines Cloud Computing⁹ as *"a model for enabling ubiquitous, convenient, on-demand network access to a shared pool of configurable computing resources (e.g., networks, servers, storage, applications, and services) that can be rapidly provisioned and released with minimal management effort or service provider interaction"*.

The Essential Characteristics of Cloud are

- On-demand self-service
- Broad network access
- Resource pooling
- Rapid elasticity
- Measured service

The deployment models for the Cloud are

- Private
- Community
- Public
- Hybrid

The figure 13¹⁰ shows the three Cloud Computing delivery models which are distinguished based on the level of abstractions they export to the Cloud users (or programmers) and the level of computing resource management (flexibility) they offer.

⁹ The NIST Definition of Cloud Computing - NIST Special Publication 800-145
<http://csrc.nist.gov/publications/nistpubs/800-145/SP800-145.pdf>

¹⁰ TCS Cloud Taxonomy

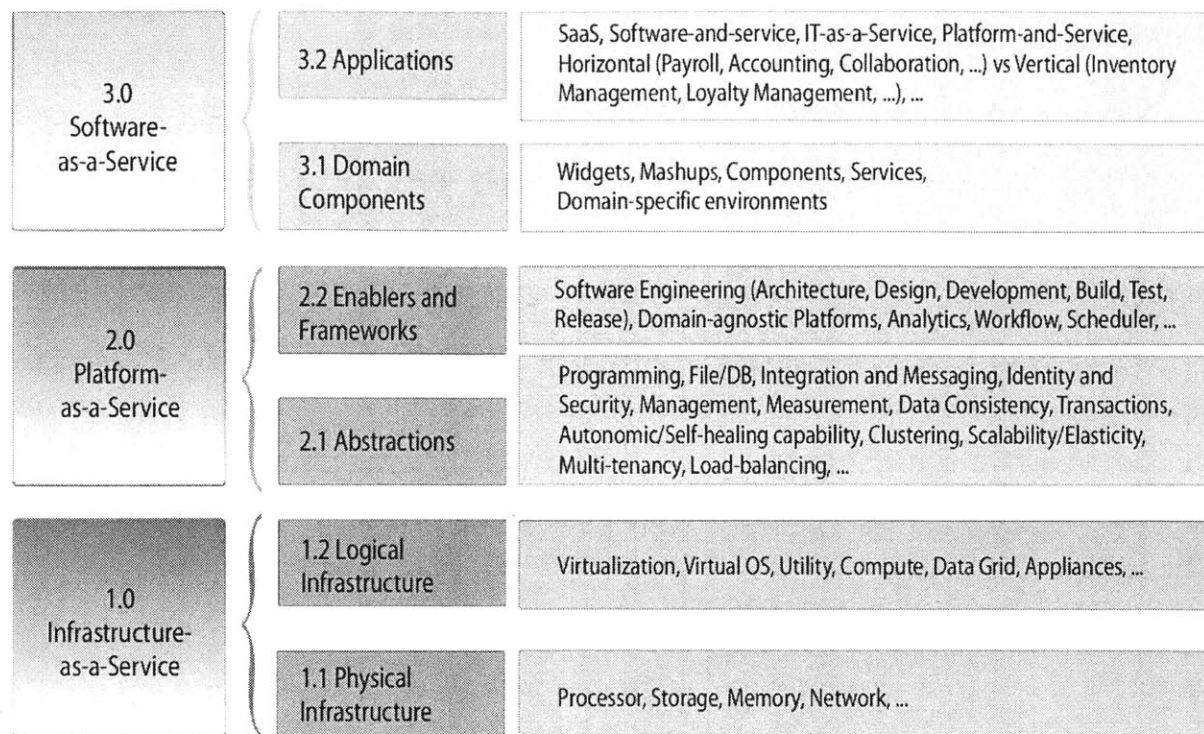


Figure 13: Cloud Computing Business Model

The IaaS layer contains the following sub-layers:

- Physical Infrastructure – This addresses the elements of physical infrastructure such as processors, storage, memory, network and devices.
- Logical Infrastructure – This is the backbone for Cloud infrastructure. Areas to address include techniques for virtualization such as hypervisors, virtual operating systems, and other logical elements such as utility computing and compute- grids.

The PaaS layer contains the following sub-layers, which enable the building of true Cloud applications:

- Abstractions – Building a Cloud application requires a review of almost every computing paradigm to devise tools and techniques for exploiting

the Cloud infrastructure. This sub-layer also provides APIs to the higher layers to exploit the infrastructure. Some of the areas to address will include programming techniques, file system, integration patterns, techniques for data consistency, and transactions.

- Enablers and Frameworks – These address the domain-independent tools and techniques for building applications in the Cloud. These are reusable components for higher level layers. Some of the areas to address will be Software Development Lifecycle tools, domain-agnostic platforms, and common IT applications such as workflows.

The SaaS layer contains the following sub-layers and addresses the unique needs of the customers by providing domain-specific software as a service. This contains the following sub-layers:

- Domain Components – These address the domain-specific tools and techniques for building applications on a Cloud. These are reusable business components. Areas to address will include mashups, widgets, business services, domain-specific platforms such as mobile application platforms, and so on.
- Applications – This sub-layer addresses various application offerings, horizontal and domain applications that can be provided in a SaaS mode.

This layer also provides the unique services needed to bring out the true value of Cloud Computing to enterprises. It also looks at the various service offerings provided by the IT vendors, including advisory (consulting), migration, application development, and deployment.

It will encompass business concerns of consumers and providers, including the type of Cloud (private or public or hybrid or federated),

innovative pricing models, costing models, and innovative strategic platforms.

Cloud Computing can make a real difference for businesses by increasing productivity, reducing costs and enabling IT staff to focus on line of business activities rather than supporting hardware and operating systems. For 2010¹¹ as well as 2011¹², Gartner Research has identified Cloud Computing as the topmost technology in its annual list of top 10 strategic technology areas.

According to the 2009 research program conducted by Accenture and the World Economic Forum as shown in figure 14, cloud computing has the potential to benefit organizations, whole industries, and even entire economies by:

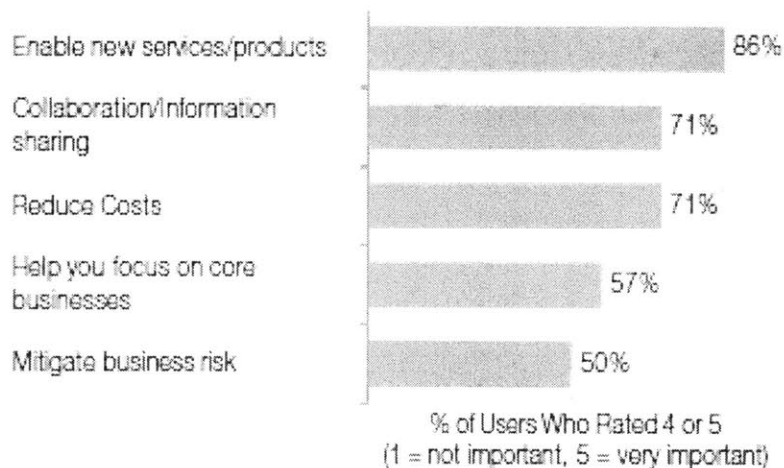


Figure 14: Important Benefit for Current and Potential Cloud Users

¹¹ Gartner Identifies the Top 10 Strategic Technologies for 2010 – Gartner Press Release dated 20-Oct-2009 -<http://www.gartner.com/it/page.jsp?id=1210613>

¹² Gartner Identifies the Top 10 Strategic Technologies for 2011 – Gartner Press Release dated 19-Oct-2010 - <http://www.gartner.com/it/page.jsp?id=1454221>

- Accelerating the creation of new products and services, by helping companies collaborate more effectively and through access to more powerful and economical computer resources
- Increasing the ability to mine data for important trend information, such as customers' changing needs and competitors' moves in the marketplace
- Providing a level playing field to all companies by giving them access to information technology that previously was affordable to only the largest of the companies
- Providing an ability to emerging nations to leapfrog to higher levels of technological development by more immediate and affordable access

PwC (earlier called PricewaterhouseCoopers) in an article "The cloud you don't know: an engine of new business growth¹³" for its quarterly journal "Technology forecast" in 2010 says that "*Cloud computing can unlock latent value of an organization's key internal capabilities and processes by enabling the extensible enterprise*".

The same article provides examples of a few companies such as LiveOps¹⁴, Zuora¹⁵ and ADP¹⁶. It says that LiveOps has built cloud based customer support process business platform. The LiveOps's On-Demand

¹³ The cloud you don't know: An engine for new business growth
<http://www.pwc.com/us/en/technology-forecast/2010/issue4/features/business-growth-pg1.jhtml>

¹⁴ Company Website - <http://www.liveops.com/>

¹⁵ Company Website - <http://zuora.com/>

¹⁶ Company Website - <http://www.adp.com/>

Contact Center Platform¹⁷ enables enterprises to deploy, on demand, an instantly scalable contact center solution using a pay-per-use model.

Zuora has created a cloud based billing system, which allows rapid scaling of billing operations via its Z-Billing product¹⁸.

ADP has developed various business platforms, taking advantage of the cloud's ability to integrate faster and at lower cost. ADP's customers who require the functionality offered by different platforms can access them in a pre-integrated way.

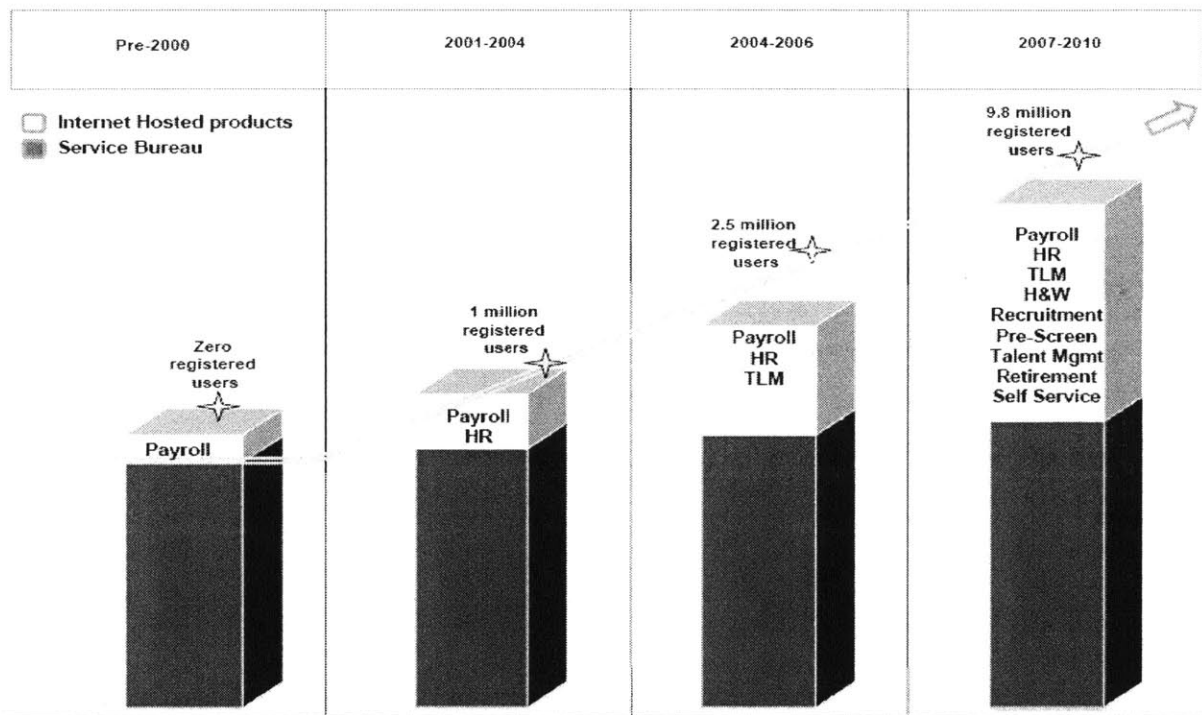


Figure 15: Rapid Growth of ADP Software-as-a-Service Products

¹⁷ LiveOps On Demand Contact Center Platform - <http://www.liveops.com/on-demand-contact-center/contact-center-platform.html>

¹⁸ Zuora's Z-Billing product - <http://www.zuora.com/how-it-works/subscription-billing.html>

ADP developed a platform and integrated it with other cloud based providers. It integrated functionalities it didn't have, using cloud computing, to bring together a richer set of end-to-end services through partnership and integration with other cloud service providers.

The figure 15 shows the successful adaptation of Cloud and Rapid Growth of ADP Software-as-a-Service products, helping it increase registered users from 2.5 million to 10 million in nearly 10 years from 2000 to 2010¹⁹.

The ability of Cloud computing to increase collaboration and integration, both within and with external source, creates a platform more robust compared to simple data exchange. ADP has leveraged its ability to integrate rapidly with other cloud service providers, extending its value proposition by combining its own capabilities with those in its ecosystem, creating wins for itself, its collaborators, and its customers.

The collaboration in the ecosystem is not a new concept. Cloud computing technologies have helped in lowering the cost of deeper collaborations and in accelerating adoption.

The Indian IT-BPO companies are very bullish about the capability of cloud computing. TCS believes that Cloud Computing is very attractive to the Enterprise IT world and IT service providers, due to the multiple opportunities around innovative business models²⁰. TCS considers that the business models around cloud computing will prove to be potentially disruptive.

¹⁹ Automatic Data Processing, Inc. Annual Financial Analyst Conference February 18, 2010 http://www.investquest.com/iq/a/adp/main/Feb2010ADPFinacialAnalystConf_Final.pdf

²⁰ Dr. Gautam Shroff, Dr. Harrick Vin, Vijayalakshmi Gopal, V. Srinivasa Raghavan, Vinay Kulkarni - TCS's Service Offerings in Cloud Computing http://www.tcs.com/SiteCollectionDocuments/White%20Papers/Innovation_Brochure_TCS_Service_Offering_Cloud_Computing_09_2009.pdf

Chapter 5: Business Platform through Cloud

Cloud computing creates a new strategic option of growth for the Indian IT-BPO companies. It provides an opportunity for both internal effort and external partnership by offering business services as cloud services. Network partners will help grow the business by complimenting the cloud services at minimal marginal cost.

The business service on cloud is a paradigm shift from the earlier slow, one-off partnership and customer acquisition processes in the pre-cloud era to the scalable partnership, service delivery and customer service offering made possible by the cloud.

The Business Service Platform provides a complete business solution on the cloud by packaging a technology platform with domain applications. It can be used for domains such as Insurance Policy Administration, Claims Processing, Human Resource, Point of Sale, etc.

A platform implementer provides software licensing, hosting, implementation, application support, and personnel required for running the process operations while the usage is mainly pay-per-use mode. It helps move the service delivery from being people-centric to platform-centric.

The table 1 provides a comparison of the traditional service model and cloud based business service platform model.

Table 1: Comparison Chart – Traditional vs. Business Platform

Parameter	Traditional	Platform
Scope	Business process (Only the business part)	Business Process including combining data/Information (Includes both Technology along with Business)

Pricing	Fixed price contract Or Time and Material (Price not related to customer's business cycle)	Transaction based pricing model (Pay-per-use)
Scalability	Low as specific/customized for each client	Very High. Same platform can be used for multiple clients

There is an opportunity to build software-based business services platform in the cloud and then create an ecosystem with the help of other cloud-based providers. Cloud based business service can scale revenue much faster and at lower cost than traditional approaches.

The challenge is to create an adaptable and modular business service to enable deeper process integration with partners and collaborators. Adaptable service should support the broadest range of use cases, attracting broadest set of ecosystem partners and a bigger revenue stream. The service should be modular and standardized with better interfaces for integration with other business platforms. The business service should be versatile because of the potential for use in multiple contexts.

The cloud based business service will ideally never be used as a standalone application. It will either be shared or integrated with other cloud based process or would be used as an extensible part of enterprise IT system of the customer. In order to drive the best out of the business service platform, human intervention should be more of an exception.

The road to a cloud platform will require significant changes in the internal mindset. From a service based organization to a platform based, which is a combination of product and services will require different

performance measures. The skillsets would need to be aligned, be it of the sales, marketing or the technology team.

Moreover, the financial return will be slow and often painful. The operating margin would be depressed in the initial stage due to relatively high sales and marketing cost, high customer acquisition costs, slow customer acquisition and customer churn.

An example is Salesforce.com²¹ which has current gross margins of over 80 percent²², although it has a very low operating margin due to high sales and marketing cost. However, it is expected that after the initial years of investment lasting between 1 to 3 years, margins are likely to be phenomenal once revenue crosses a threshold.

The ability to cater to multiple customers through a business service platform through Cloud makes an attractive investment for the service providers in the long term. The fixed cost incurred in creating and delivering services is recovered with an increase in customer base, resulting in higher margins over long term. The economies of scale are derived from usage across multiple customers.

Offering through Cloud Based Business Service Platform

The Business Service Platform can provide solution to following major segments

- Finance & Accounting

The platform will help customer streamline their finance and accounting processes, and decrease the costs of implementing, maintaining and upgrading finance applications.

²¹ Salesforce.com <http://www.salesforce.com/>

²² Salesforce.com Annual report 2011

Key finance and accounting processes should be identified that can be outsourced. While transactional processes such as accounts payable, accounts receivable, billing, etc. are obvious choice, with improvements in capabilities, higher end value services such as statutory/regulatory accounting, financial reporting and tax can also be targeted.

- Human Resources

The platform will offer standardized global HR outsourcing services through operational expertise gained through various HR outsourcing projects.

Some of the key services provided by the Platform are: Resourcing Services, Workforce Management, Talent Management Services, and Compensation & Benefits etc.

- Analytics / Business Intelligence

The platform should focus on areas such as analytics and business intelligence for business service platform offering. The ability of cloud computing to provide scalable computing needs should be utilized in the areas of Customer Analytics, Supply Chain Analytics, Risk Analytics, and Marketing Analytics etc.

- Procurement

Procurement activities relating to sourcing and supplier management, which help reduce transaction cost of purchasing goods and related services is another important business service which can be offered through the platform.

Customers for Cloud Based Offerings

According to the 2009 research program, conducted by Accenture and the World Economic Forum²³, industries most likely impacted by cloud computing based on the respondents who answered 5, 4 or 3 is shown (from left to right) in the figure 16.

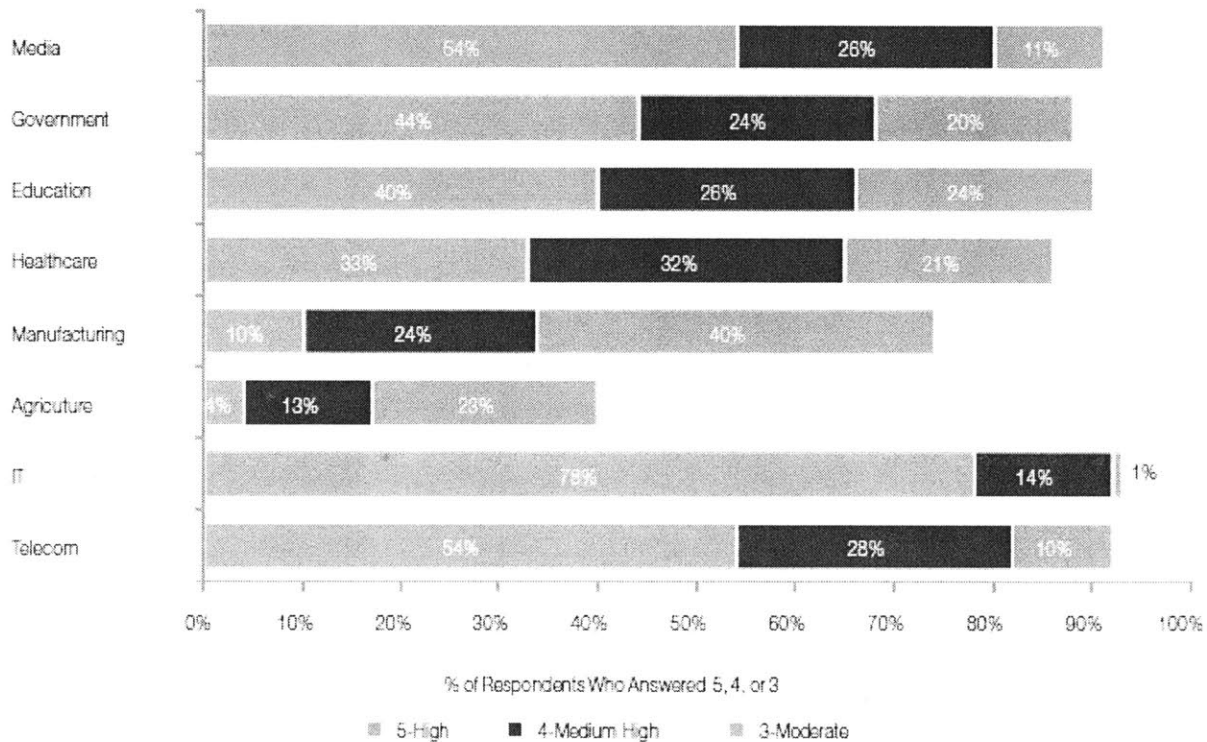


Figure 16: Industries Most Likely Impacted by Cloud Computing

Companies are likely to turn to their existing IT Service advisors to help them navigate cloud projects and these providers should pitch with their platform offerings. The IT services industry has proved itself earlier, which gives them more credibility to fill the trusted advisor role. Further, through their existing relationships, many IT services companies have also

²³ World Economic Forum Report (2009) - http://www3.weforum.org/docs/WEF_ITTC_FutureCloudComputing_Report_2010.pdf

demonstrated their abilities to address many of the top concerns that CIOs have about the cloud, which are shown in the figure 17²⁴ (in order of largest concern, 2nd concern & 3rd concern in the figure below) .

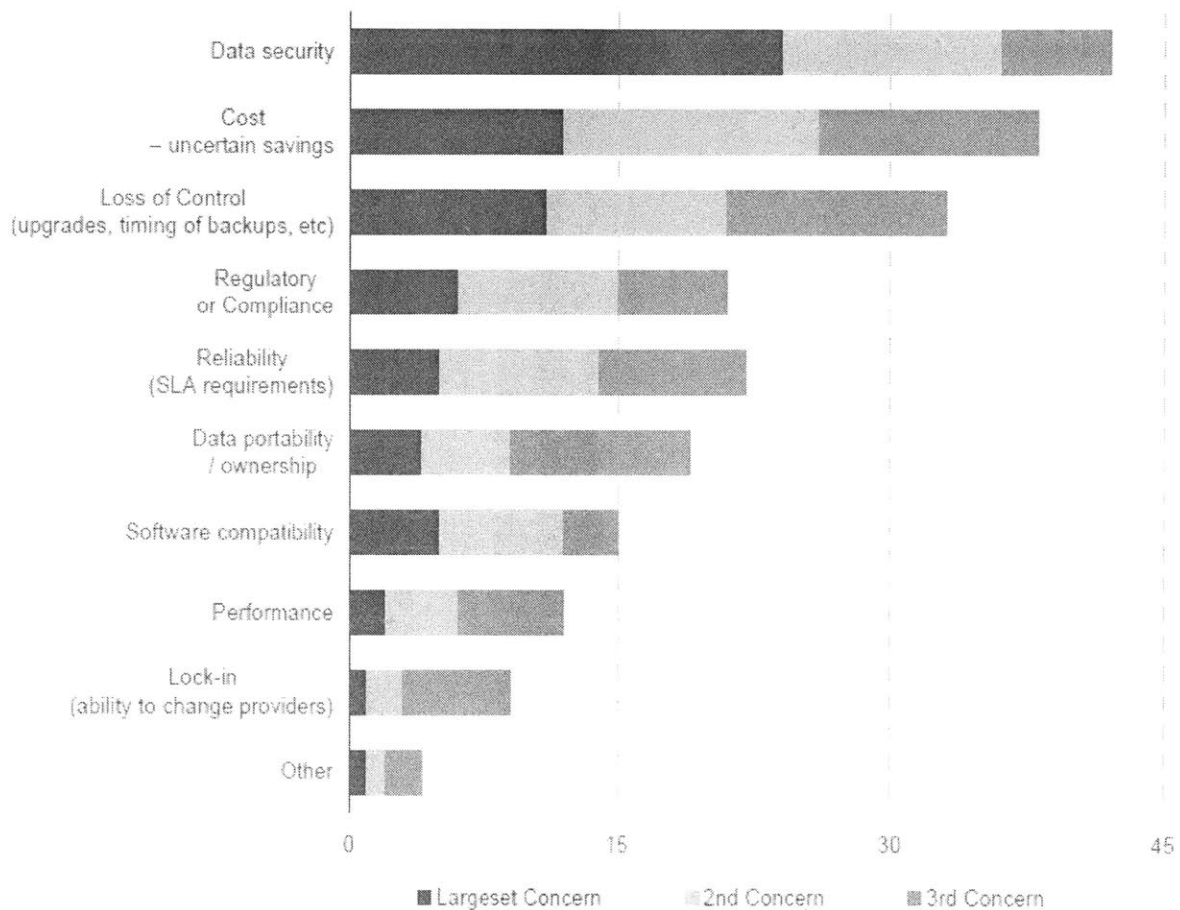


Figure 17: CIOs' Top Cloud Concerns in Percent

Another important customer segment to focus is the Small and Medium Businesses (SMB) enterprise. It is a burgeoning economic segment that is capable of driving economic growth in its own right. In Germany²⁵,

²⁴ Morgan Stanley Research (May 2011) – Cloud Computing Takes off

²⁵ TCS whitepaper: IT-as-a-Service for Small and Medium Businesses

46% of the GDP is contributed by SMBs. In India, while the contribution of SMBs to exports is 46%, the sophistication of IT in Indian SMBs is poor.

The major Indian IT-BPO companies have been working with mainly Fortune 1000 companies, basically ignoring the SMB sector. It is mainly due to the marketing and sales effort, leading to higher overhead cost and thus, decreasing in operating margins. It is also due to the fact that the products and services that have traditionally served large enterprises cannot be applied to a SMB. Products need to be rebuilt, and service models need to be configured to address the characteristic requirement of this segment.

In the SMB sector, capital investment in IT is unplanned and tends to be deferred. Coupled with the fact that an IT project could take several months to go-live and could fail too, upfront IT investment is rightly seen as risky for these companies, who perennially struggle for working capital.

The Business Service Platform can provide an opportunity to IT-BPO companies to target the long tail of the market. With minimum upfront investment required from the SMB companies and pay-per-use revenue model, the SMB segment would be eagerly willing to join the platform. Moreover, due to the ability to serve multiple customers through the platform, the provider will be able to share the resources, helping them increase profitability.

Drivers for the Success of the New Platform

By adapting the business service platform, prospective customer will be able to offset economic uncertainty by avoiding large investments. The pricing model would be based on actual usage on monthly/quarterly basis, providing a flexible and scalable model.

Customers would free up capital to innovate and scale up/down based on market needs. The service provider would execute, maintain and take care of upgrade, thus, releasing the client's resources. The customer would

be able to focus on their core competencies and move non-core functions/processes to 3rd party and gain cost advantage due to economy of scale on the vendor side.

As the vendor would be providing the service to multiple customers, it is expected that the processes would follow industry standards. The customer can use the same platform across businesses and geographies, helping the company move to a common process, decreasing complexity and improving efficiency in their operations.

Business platform through cloud provides an ability to connect to other cloud business services through the same platform. This reduces implementation and business cycle time by incorporating configurable plug-in templates and shared synergies through a multi-client system architecture.

With acceptance of Cloud Computing, the spending priorities will shift away from some traditional services, leading to an increase in demand for services in aggregate.

Benefits for the Business Service Provider

A Business Service Platform showcases the service provider's expertise and contributes to its brand image. Branding can act as a pull for the client to push through implementation oriented work. It also provides credibility to provider's business domain expertise in a highly competitive environment.

The platform helps increase profits by charging a premium for the value created and the risks undertaken. As the same platform will host multiple customers, revenue generation is expected to be based on service provided to customer and not on the employees assigned, helping de-linearize growth through standardization and large-scale productivity payoffs.

Chapter 6: Implementing Business Platform

The Indian IT-BPO companies provide IT related services to their customers. Creating, implementing and operating would bring in a new set of challenges for these companies. Their success will define the future trajectory of these companies, as it provides them with an opportunity to move to a non-linear revenue model.

The Business Platform can be implemented in multiple business areas but a company can't focus everywhere at once. The starting point would be finding a customer or a business partner who is ready to become the user of the platform. Although for any new enterprise or any new offerings, it is of paramount importance to find the first customer, the inability to find the first customer should not be the end of the story. The company can research the market, talk to its multiple customers and gauge the gap in the market on the area it can focus. It should also look within the organization to understand its competencies and decide on the business areas it can provide a complete service offering.

The provider should then try to understand the business requirement and create an implementation roadmap. In order to serve multiple customers, the model requires standardizing the functionalities and finding opportunities to rationalize the process to industry standards and best practices. The applications must be designed to provide specific flexibilities. The service provider would need to support the customer to configure these business processes and to make them as per the organization's requirement.

An area of concern for customer would be the security of their data that resides in remote datacenters owned by the service provider. The Business Platform must comply with and implement a comprehensive and foolproof security policy that maintains data privacy and preserves data integrity in managed services models. The platform should be designed to

provide business continuity when faced with an unforeseen event such as a natural disaster through data replication in real time and continuous operations from an alternate data center.

Key Drivers for a Sustainable, Cost-Effective Business Platform

Under the Business Platform umbrella, there is a fundamental change in software business paradigm, spanning from customer relations to revenue recognition to rollouts. The customer and service partner need to understand the new set of fundamentals in order to be successful in driving a cost-effective Model.

Considerations for Customers

Companies should recognize a partner with the right set of skills and domain expertise for using a Business Platform. The partner should be willing to understand the customer's business dynamics, and offer the right mix of functionality and features. It can then build additional value around it with complementary features or components. It can be provided through partnerships with other providers to deliver complex integration, data migration, and on-demand infrastructure requirements of the customer.

The true value proposition to business platform should employ a subscription/utility pricing model rather than term licensing. This offers immediate value to customers through "pay as you go" pricing models. The customers should not be required to make a huge financial commitment up front.

The contract should be negotiated to avoid unexpected costs. Any hidden costs should be understood to negotiate deals with predictable costing terms. The right contractual terms with the business platform provider should be established focusing on the key contractual elements listed below.

- Security, data protection provisions, and regulatory compliance

- Performance, availability, and uptime service-levels agreements (SLAs)
- Business viability
- Integration with legacy business applications
- Disaster recovery provisions
- Exit clauses

Adequate security safeguards are of paramount importance to customers when applications and underlying data are hosted by Business Platform provider. Customers need to ensure that critical data is protected from unauthorized access/use, and that third-party data hosting center provision world-class security at every level –physical, personnel, network, application, and data security (including authentication, encryption, firewall, and password technologies). A provision in the contract can be added to certify the security compliance or to audit the provider for security compliance and data protection laws.

The Business Platform should be flexible to accommodate the dynamic nature of business requirements and reduce recurring cost to clearly demonstrate advantage in terms of lower total cost of ownership (TCO).

Considerations for Business Platform Provider

A delivery model for Business Service Platform created to provide business process solution to multiple customers, while increasing the revenue productivity of the provider, is shown in the figure 18.

The barometer to high customer satisfaction is a rich and unique user experience, which demands a distinct look and feel that is consistent with the branding needs of the organization.

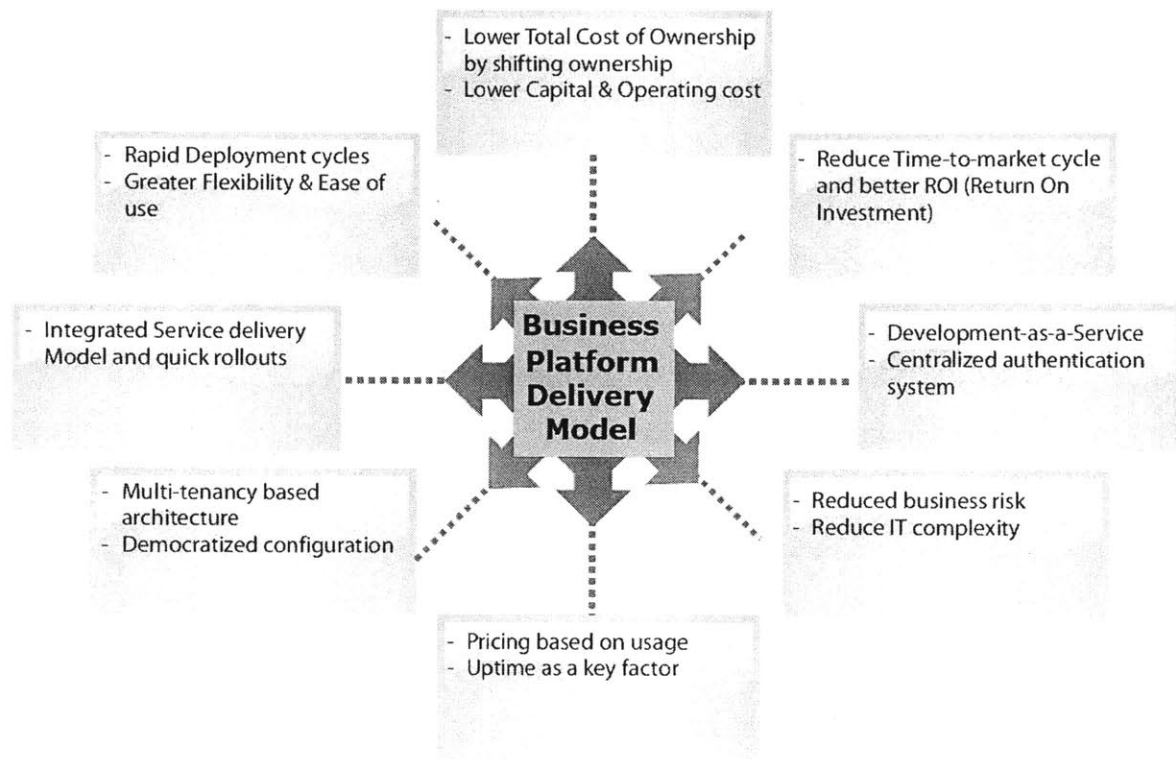


Figure 18: Business Service Platform Delivery Model

Availability of business applications and underlying systems helps in delivering unique user experience. In the event that applications are unavailable to business users, their Business-as-Usual (BAU) is impacted, which in turn impacts their SLAs. On-demand platform demands highest level of service.

The factors contributing to high level of customer satisfaction are

- Deliver rich end-user experience (understand end-user metrics)
- Set up a cost-effective, responsive 24/7, multi-tiered support
- Deploy skilled vendor support staff with domain-level expertise and problem-resolution skills
- Ensure secure access and data privacy
- Address availability and manageability requirements

- Realize the right balance of customization v/s configuration provisions
- Optimize performance and manage scale

The Business Platform provider needs to set the right expectations at the very onset of the engagement, through a good understanding of the application portfolio. Transparency helps build the level of trust between the customer and the provider.

The Business Platform provider should focus on core delivery solutions by recognizing the fact that platform is only a delivery mechanism that serves as a means to the end. Core products or services should be sufficiently functional so as to obtain repeat business. The customer expects right mix of features and functionalities.

The platform should scale up to handle increased customer demand and ensure customer satisfaction. It should assume responsibility of ensuring adequate performance and availability of these applications.

The desired level of customization and configurability needs to be ensured by the provider. This can be done by carefully identifying and assessing the scope of customization (how much and when) in conjunction with time and resource constraints.

A flexible outcome pricing models should be provided to the customer. The pricing can be multi-tiered in order to attract multiple customers. Low cost pricing should not cannibalize higher cost pricing, which has higher margin to the provider.

The Business Service provider should explore all possible on-demand security solutions to safeguard each customer's vital data and information. It should ensure that customer data is separated and secured.

Control application access (who can access the tenant information and where is the end user information stored and maintained) and Control role-

based access (who can access which features within an application) are two important perspectives which should be adhered to.

The Business Platform should also provide

- Scalable and robust multi-tenant architecture based on Service-oriented architecture (SOA) principles
- Standard-based solutions with integration flexibility or provisions
- Ability to support degrees of configurability and an adequate level of customization - collect, collate and configure meta-data at each level
- Data security – fine-grained role-based access
- Data isolation - Keeping customer/vendor data separated and secured
- Adherence to regulatory compliance and security standards

In a highly competitive and turbulent environment/market, the time to market and reliability are critical differentiators. The provider should forge strategic alliances with industry leading product vendors and solution providers.

Multi-tenancy efficient architecture along with enterprise proven on-demand applications is an important requirement for Business Service Platform. This requires several technical challenges to be addressed, by following which service providers can build and deploy scalable, customizable, manageable, and cost-effective multi-tenant solutions.

Multi-tenancy is ultimately a means of achieving cost efficiency, given that it is primarily intended to reduce the number of deployed instances and to align the necessary schema. Multi-tenancy ensures that it is cheaper and easier to manage a deployed instance and also minimizes the number of administrators required for the deployment. An effective multi-tenant architecture is driven by the following factors:

- The type of customers
- Volume of data per tenant

- Projected volume of transactions per tenant
- Types of transactions that the tenants will generate (% Read vs. %Write)
- Customer-specific security requirements (data isolation)
- Business Intelligence and reporting model
- Tenant-pricing model and uptime SLAs

There would be paradigm shift in the way software products or services are sold in the market, from the sale of product/service to continuous delivery and deployment model. The provider should implement meaningful SLAs to measure quality of service with un-interrupted usage. The platform should support business needs by simplifying business processes and functions at each layer of the infrastructure and business applications.

TCS has created a business platform for SMBs through cloud²⁶ called "iON". It is likely to use the consulting and operational takeaways from its cloud initiative for small and medium businesses in India to roll out the offering for its global clients, thus creating a new revenue line for its services. This new platform could drive an improvement in revenue and EBIT per employee for the company as it gains scale over the coming years. It currently has more than 150 customers and looks to achieve revenues of \$1 billion within five years

TCS has created dedicated business unit to address the specific needs of Small and Medium business customer segment. Its solutions consist of seven layers of fully integrated services, providing hardware, network, office & business application along with core application for the customer. It also provides a business analytics solution.

²⁶ TCS's Service Offerings in Cloud Computing
http://www.tcs.com/SiteCollectionDocuments/White%20Papers/Innovation_Brochure_TCS_Service_Offering_Cloud_Computing_09_2009.pdf

The detail about TCS iON platform is provided in [Appendix B](#). The complete solution offering is shown in the figure 19.

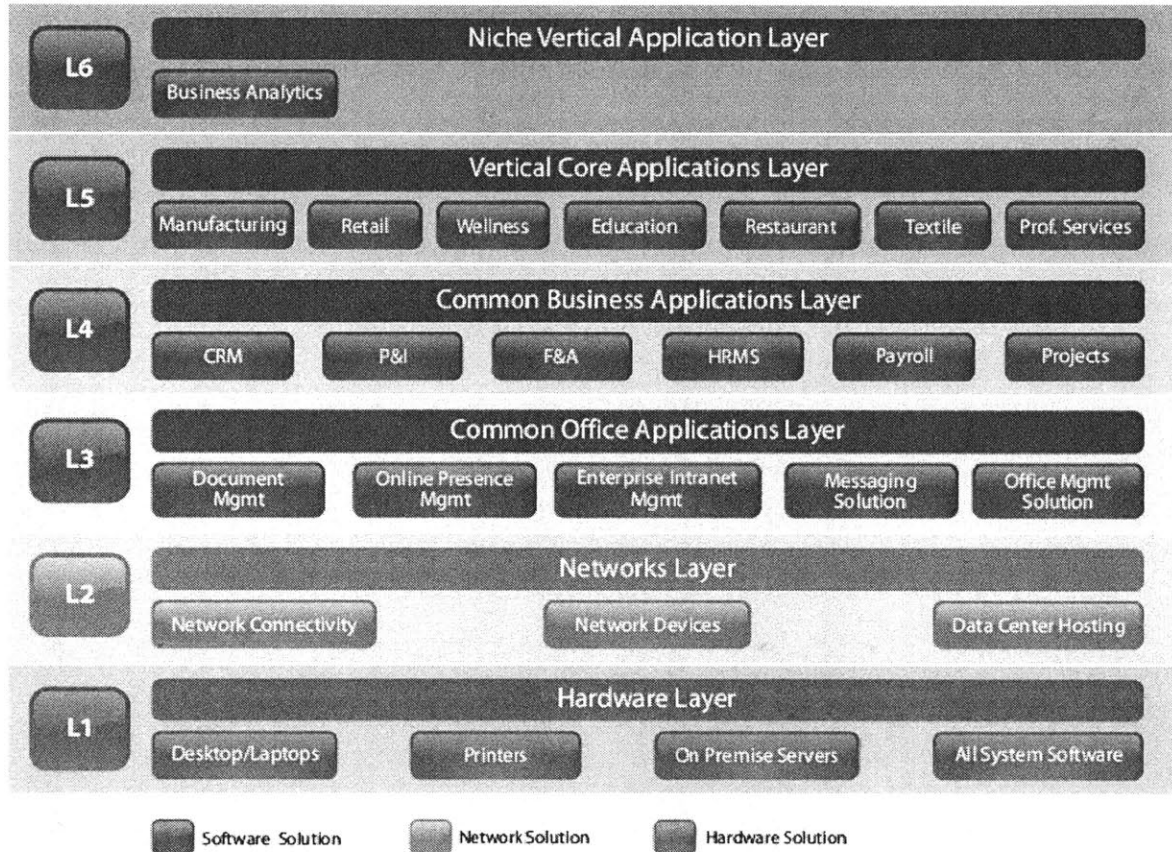


Figure 19: TCS iON Business Platform - Solution Stack

Infosys is using the cloud to enhance its non-linear revenue initiatives, which will help to differentiate its consulting services. Its software as a service platform has also helped its banking product – Finacle – to increase revenues²⁷ (47% year over year in fiscal year 2011) and to expand its customer base by reducing the infrastructure requirements for its clients.

²⁷ Morgan Stanley Research (May 2011) – Cloud Computing Takes off

Internally, its projects have already adopted the internal enterprise cloud that can host over 3,000 virtual machines and it maintains a 90% utilization of the virtual instances.

Infosys prefers to develop platforms for clients with existing needs. The company also holds platform roll-outs until clients have been won for its existing platforms in a given segment.

Infosys positions itself as a cloud ecosystem integrator by providing comprehensive service for the cloud through industry leading services and ecosystem partnership.

The portfolio²⁸ shown in figure 20 consists of

- Offering business solution to clients business problems
- Enhancing power by domain expertise, IP and Cloud Computing
- Providing measureable business outcomes

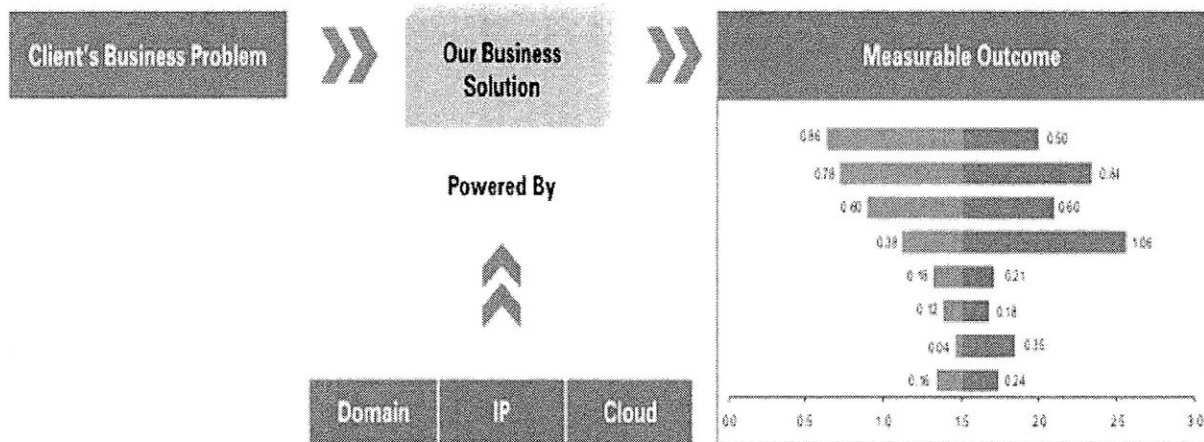


Figure 20: Infosys Business Platform - Core Ideas

Infosys divides its cloud offering into two categories

²⁸ <http://www.infosys.com/cloud/offerings/services-in-cloud/Pages/index.aspx>

- Services for the Cloud²⁹
- Services in the Cloud³⁰

“Services for the Cloud” addresses various aspects of Cloud adoption. It provides companies with business agility while reducing total cost of ownership. “Services in the Cloud” creates three kinds of platforms, namely functional platform, vertical platforms and bridge platforms.

The details about Infosys Cloud offering is provided in [Appendix C](#)

Wipro provides its clients a portfolio of industry-specific business process solutions delivered as cloud services³¹. They are driven by Wipro’s replicable cloud solutions and frameworks conceptualized and developed by a strong R&D backbone consisting of over 20 cloud centers of excellence.

These has been developed through a strong partner ecosystem comprising of global Cloud solution/service providers like Microsoft, Cisco, EMC, BMC, Amazon, SFDC, Netsuite, SAP, Oracle and Redhat.

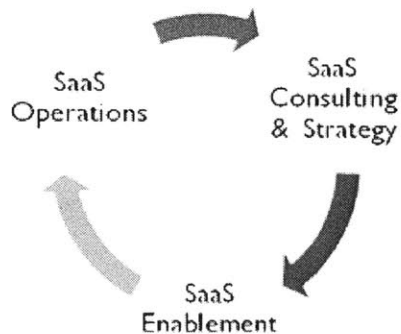


Figure 21: Wipro Comprehensive Cloud Services for ISV

²⁹ <http://www.infosys.com/cloud/offerings/Pages/details.aspx>

³⁰ <http://www.infosys.com/cloud/offerings/services-in-cloud/Pages/details.aspx>

³¹ <http://www.wipro.com/services/cloud-services/cloud-services-why-wipro.aspx>

Wipro has also launched the "Comprehensive Cloud Services for ISVs"³², focusing on enabling the Independent Software Vendors (ISVs) to transform their current product portfolio into SaaS business model and achieve faster time to market as shown in the figure 21.

The details about Wipro Cloud offering is provided in Appendix D

Risk & Challenges

All business opportunities come with risks attached to it. The risks associated with Cloud Computing can be divided into two part, business risk and technology risk

- **Business Risks**

Governance: Without oversight, it is unable to create and implement future roadmap. Ability to successfully manage the ecosystem requires a robust governance model.

Vendor Alignment: Customers need to endure that the provider is operating at a profit. The cost of moving from one service platform on cloud to another can be catastrophic. Similarly, like in any business, ability of its vendors to make regular payment is important.

Regulatory: Compliance with the myriad of rules including SOX (Sarbanes-Oxley Act), HIPAA (Health Insurance Portability and Accountability Act), PCI (Payment card industry) and others while taking advantage of the economic model

- **Technology Risks**

³² Wipro Comprehensive Cloud Services for ISVs-
<http://www.wipro.com/industries/computer-software-solutions/wipro-comprehensive-cloud-services-for-isvs.aspx>

Bandwidth: Network bandwidth is the most important component of the model without which the model is an illiquid asset. In developing countries, reliable bandwidth is still a concern.

Data: Global issues of privacy, ownership, security and discovery are of concern. When the data moves, the provider must ensure alternate/old copies are securely destroyed.

Security: Securing data is fundamental when using external network resources such as the internet. Once the data is secure, limiting access via identity management is critical but may require integration creating a point of vulnerability

- Resource and Skillset

The article "Developing Talent for the Software Product Business"³³, published in November 2008 by NASSCOM Research, states "*While India has a significant installed base of release management expertise in the area of IT services, these professionals do not have experience in managing product launches and releases, managing subsequent product releases, patches, updates, platform interoperability, etc.*" It further adds "*While a portion of the talent is working in development, quality assurance and support functions, a small number is getting involved in the product concept and design phases*".

In the figure 22, Booz Allen Hamilton clearly indicates the lack of maturity in product development. For decades the strength of Indian IT industry and its workforce has been on one-off custom development projects. With Platform offerings coming into the spotlight, it would be a

³³ NASSCOM Research – <http://blog.nasscom.in/nasscomnewsline/2008/11/developing-talent-for-the-software-product-business/>

challenge to use the same workforce for designing and delivering. It would actually lead to a problem of multi-instancing of the product/Software as opposed to ideal multi-tenanting of the platform and hence can be a big challenge if not acknowledged and addressed early on.

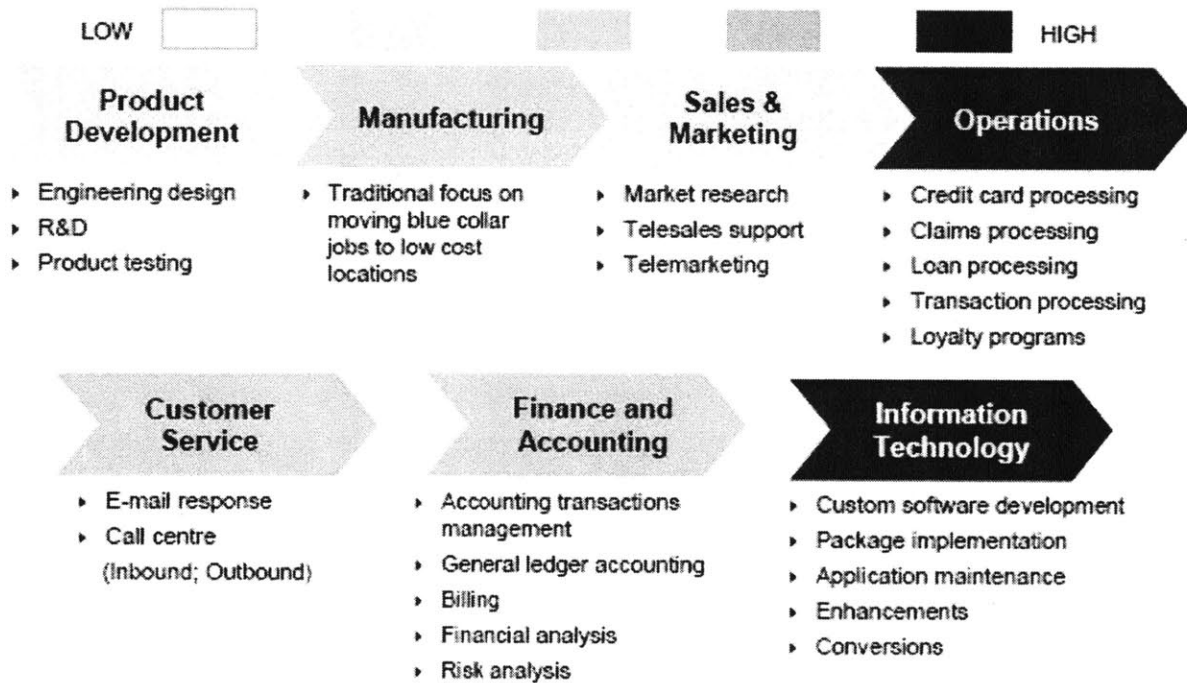


Figure 22: Level of Offshore Service Maturity

In order to meet the business imperatives shown in figure 23, companies must contend with several key challenges in managing their platform conceptualization, design, and development programs.

- Developing platforms: Evolving towards platform that can form the basis for multiple products lines while fueling innovation with partners
- Developing solutions concurrently: Re-focusing platform from being product centric to being product and solution centric

- Effectively leveraging intellectual property (IP): Identifying, capturing, protecting, and using IP from internal and external sources, maximizing re-use and re-deployment of existing artifacts
- Managing Platform development costs: Managing the cost and complexities, both within and outside company borders.



Figure 23: Key Imperative for Product Development

The table 2 lists down that the characteristics of working for IT Service engagement and platform development, is very different.

Table 2: Difference between I.T. Service & Platform Development Characteristics

Operating Characteristics	IT Service	Platform Development
Scope and Ownership	Very Defined, Individual outsourced, done	Partnering for entire products, virtually every

	opportunistically, no responsibility outside of the contracted delivery code or component	aspect of development. Goals aligned to overall platform/product success in the marketplace.
Pricing Model	Rate times hours based on skillset requirements and estimate duration of involvements, No other payments are made	Fixed recurring cost based on estimated efforts. Marketing, Sales, Customer Development and Relationship, Operations Cost involved
Risk Sharing	None, Customer bears almost the entire risk	Total Risk
IP Contribution	Core/component design deliverable become IP of the customer	Code/component, design deliverable become IP.
Partner Driven Product operations	Software engineering process only	Besides Software, it involves, market research marketing, sales, operations etc.

As discussed above, the Indian IT Service companies do not have the required skillset. They would need to acquire both the resources and operating model. With already a dearth of technical talent available in India, the companies should make sure to adapt their training program. Changing the mind set of existing employees, who have been ingrained working as an IT Service provider should be a bigger challenge.

The current sales and marketing processes for the IT companies are more geared towards large companies, mainly targeting Fortune³⁴ 500 companies, while the expected customer base for Business Service Platform, the Small and Medium Enterprise would be outside this list. The companies target multi-million dollar revenue from large customers. The expected average revenue from customers on Business Service Platform is expected to be much lower but in order to make profit, the customer would be large.

The current sales force is inclined to work with large customers and they would need to be trained to successfully close deals with new customer type.

The Indian IT companies have billions of dollars in the balance sheet and are waiting for the right investment opportunity. In case they decide to create a Business Platform, they should look to acquire small product companies that have niche product that matches their platform needs. The product company would provide talent more conversant in working in the product/platform development environment, while their product can be used in quickly developing the platform.

The other option would be to build partnership or create a joint venture with medium sized product companies. While the revenue upside would have to be shared, the challenges and risk would also decrease considerably. Both the companies can use their expertise and create a platform. Moreover, brand value of both the company would help in marketing the product, helping get in more customers initially. Early acquisition of customer would help validate the solution, attract other customers helping share the high initial investment and improve operating margins.

³⁴ Fortune Magazine <http://money.cnn.com/magazines/fortune/>

Chapter 7: Future Roadmap

Cloud computing has the ability to disrupt the market dynamics, for both the customer and for the IT Service provider. It provides an opportunity to Indian IT-BPO companies to utilize this technological breakthrough to emerge as leaders and cast away their role of playing catch up. They can lead and define the future landscape, instead waiting and watch for the industry to evolve.

Amazon³⁵, Salesforce.com and Google³⁶ are the world leaders and the gold standards in cloud computing today, in terms of both coverage and impact on businesses worldwide. They have been at the forefront of cloud computing by disrupting and catering to business and consumer demands, in order to stay ahead of the game.

Indian IT-BPO companies do not need to cover the entire spectrum of the cloud offering. They need to utilize their core skills, which have brought them success along with their ability to develop software, provide standardization, quality control and domain expertise. They should focus their investment in the area of SaaS and Cloud Services.

Indian IT-BPO companies should form partnerships for cloud components that they do not pursue, making sure their partners are reliable and in for a long run and do not become a point of failure.

The companies should ensure ease of migration for customers. There should be minimum effort to migrate from client's platform to the vendor's business platform, by providing scalable, standard technology to support the majority of the client's requirements with minimal customization.

³⁵ Amazon Web Services <http://aws.amazon.com/>

³⁶ Google Apps for Business - <http://www.google.com/apps/intl/en/business/index.html>

Processes should be standard across business verticals. It will help attract customers while also keeping the cost of maintenance and service to the minimal level. Business continuity and a failure-over prevention mechanism should be in place along with enhanced levels of data security.

The effort should be to ensure long-term contracts with outcome/output based pricing which beneficial to clients and vendors. The one-time cost in creating the business service platform is high as it includes initial setup cost, data migration cost and in many cases infrastructure setup. Long-term contracts will help the company to amortize the expense over the deal period, while the client can expect productivity gains over the lifetime of the contract. Moreover, the company should spread their investments across multiple customers, enabling them to share financial benefits by reducing operating costs, thereby cutting capital expenditures.

Appendix A: Quarterly Revenue and Employee Details

The table 3 details the employee count and quarterly revenue for Infosys³⁷, Tata Consulting Services (TCS)³⁸ and Wipro³⁹.

Table 3: Employee and Quarterly Revenue Details

S No	Quarter Ending	Infosys		TCS		Wipro	
		Employee	Revenue (in \$)	Employee	Revenue (in \$)	Employee	Revenue (in \$)
1	31-Dec-11	145,100	1,806	226,751	2,586	136,734	1,505
2	30-Sep-11	141,800	1,746	214,770	2,525	131,730	1,472
3	30-Jun-11	133,600	1,671	202,190	2,412	126,490	1,408
4	31-Mar-11	130,820	1,602	198,614	2,244	122,385	1,400
5	31-Dec-10	127,779	1,585	186,914	2,144	119,491	1,344
6	30-Sep-10	122,468	1,496	174,417	2,004	115,900	1,273
7	30-Jun-10	114,822	1,358	163,700	1,794	112,925	1,218
8	31-Mar-10	113,796	1,296	160,429	1,686	108,071	1,180
9	31-Dec-09	109,000	1,232	149,654	1,635	102,746	1,127
10	30-Sep-09	105,000	1,154	141,962	1,538	97,891	1,065
11	30-Jun-09	103,000	1,122	141,642	1,480	98,521	1,033
12	31-Mar-09	104,850	1,121	143,761	1,434	97,810	1,058
13	31-Dec-08	103,078	1,171	130,343	1,483	96,965	1,039
14	30-Sep-08	100,306	1,216	121,610	1,574	97,552	1,023
15	30-Jun-08	94,379	1,155	116,308	1,525	95,675	1,039
16	31-Mar-08	91,187	1,142	111,407	1,516	82,122	956
17	31-Dec-07	88,601	1,084	108,229	1,484	79,832	837
18	30-Sep-07	80,501	1,022	104,199	1,372	77,478	816
19	30-Jun-07	75,971	928	94,931	1,262	72,137	725
20	31-Mar-07	72,241	863	89,419	1,200	67,818	706

³⁷ SEC Filing from Infosys <http://www.nasdaq.com/symbol/infy/sec-filings>

³⁸ TCS Quarterly Report

http://www.tcs.com/investors/financial_info/quarterly/Pages/default.aspx

³⁹ SEC Filings from Wipro <http://www.nasdaq.com/symbol/wit/sec-filings>

Appendix B: TCS Current Offerings

“IT-as-a-Service” is the TCS way of serving SMBs through cloud. In the “IT-as-a-Service” model, it delivers on-demand business capability with an integrated suite of hardware, network and software solutions. It also includes the required business, technical and consulting services for SMBs. The services are provided in a “build-as-you-grow”, “pay-as-you use” model through a combination of on premise and shared services hosted platforms.

Through this, TCS provides a “One Stop Shop” for all SMB needs and removes the pain of running a highly complex internal IT departments and dealing with a large number of local vendors. It also understand SMB’s constraints with IT related budget and therefore provide a “build as you grow” model, which gives the subscriber flexibility in IT investment. The “pay-as-you-use” option provides SMBs the choice of scaling up, when their business grows. This gives them comfort of low capital investment.

TCS solutions consist of seven layers of fully integrated services.

- In Layer 1, it provides all the necessary on premise hardware needed to run the enterprise. It includes equipment such as desktop, laptops hand-held devices and more. These devices are employed at the customer premises to access the solutions that TCS provides.
- In Layer 2, it sets up the required networks to connect with its data center. Based on the bandwidth needed, it provides network connections in partnership with its network providers.
- In Layer 3, it delivers all the office solutions relevant to SMBs. This will include document management, email, collaboration suite and other office software.

- In Layer 4, it addresses the business needs. This includes Finance and Accounting, CRM, HR management and payroll.
- Until Layer 4, all its solutions are predominantly vertical or domain agnostic.
- In Layer 5, it addresses the core industry specific needs. For example, in the Manufacturing industry, its solutions will include Material, Sales, Stock, Production and other needs, while Retail will include Point of Sales, Warehouse, Store Inventory and related aspects.
- In Layer 6, it addresses niche vertical application requirements such as space management, loyalty management and analytics.
- In Layer 7, it provides necessary BPO and consulting services.

The solutions are available in three editions, depending upon the requirements for user base, and the functionality: Standard, Premium and Elite.

Customers can subscribe for one of the three editions based on their business needs.

Appendix C: Infosys Current Offerings

Infosys positions itself as a cloud ecosystem integrator by providing comprehensive service for the cloud through industry leading services and ecosystem partnership. Infosys divides its cloud offering into two categories

- Services for the Cloud
- Services in the Cloud

“Services for the Cloud” addresses various aspects of Cloud adoption. It provides companies with business agility while reducing total cost of ownership. The service includes

- Cloud Strategy and Adoption: Assesses “Cloud readiness” quotient with Infosys' Cloud advisory services and draws up a Cloud adoption roadmap, estimate Return on Investment, and define a customized business service catalogue with deployment options based on customer needs.
- Cloud Builder: Helps build a robust and secure private or service provider Cloud, through standard processes to deliver infrastructure and application Platform-as-a-service.
- Cloud Services Aggregation and Migration: Creates customized business services catalogue for customer by using Infosys' Cloud services aggregation services. It includes installation, customization, management, and closure. These services are 'Cloud-enabled' with required data migration, application migration, application remediation, and user experience services.
- Cloud Services Orchestrator: Orchestrate and Integrate Cloud services with enterprise assets by making use of best-in-class solutions that are available across the Cloud ecosystem.

- Cloud Applications Builder: Create native Cloud services involving collaborative and ubiquitous services using Infosys' SPEED Cloud factory helping gain competitive business advantage, through sustained innovation.
- Cloud Sustenance Services: Manage Cloud governance and Cloud QoS efficiently by using Infosys' Cloud sustenance services.

“Services in the Cloud” is delivered as Infosys Edge Business Platforms in the Cloud creating three kinds of platforms, namely

Functional platform for the sales and marketing needs of clients includes Infosys SocialEdge, Infosys CommerceEdge, etc. The platform for smarter organizations includes TalentEdge, Source-to-Pay etc.

Vertical platforms addresses specific industry segment needs such as banking, retail, manufacturing, telecommunication, health, etc.

Bridge platforms niche industries that exist at the confluence of the verticals. For example, an insurance product for the health traveler cuts across health, airline, hospitality, insurance and banking industries.

Their banking solution, Finacle Lite™ is a solution on a private cloud environment, tailored to address the core banking, e-banking and mobile banking requirements of co-operative banks, community banks and credit unions worldwide.

Appendix D: Wipro's Current Offerings

Wipro helps organization migrate existing applications to the cloud or consume cloud services from multiple public cloud service providers and consolidate internally through private clouds⁴⁰. Wipro helps clients achieve this through-

- **Strategy Consulting Services:** Help customers integrate cloud services into their IT portfolio across public, private and hybrid cloud environments.
- **System Integration Services:** Design, build, deploy and manage cloud computing environments – right from implementing on-premise private cloud for customers to implementing packaged product SaaS offerings.
- **Engineering Services:** Reengineer ISV packaged product to be delivered as a SaaS offering, hosting the SaaS offering in Wipro data centers.
- **Application Development Services:** Application development, testing and management services for public cloud platforms like Salesforce.com and MS Dynamic CRM.
- **Infrastructure Services:** Aimed at designing, managing and monitoring of public and private cloud environments and virtual desktop, infrastructure advisory and collaboration services.
- **Wipro branded Cloud solutions:** Industry specific solutions which will be delivered in the SaaS business model to their customers.

⁴⁰ Wipro Cloud Offerings - <http://www.wipro.com/services/cloud-services/>

The solutions and services extend across the various cloud layers - from Business Process as a Service, Software as a Service, and Platform as a Service to Infrastructure as a Service.

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