

Global Integration through Knowledge Process Offshoring*



*connectedthinking

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1. KNOWLEDGE PROCESS OFFSHORING: AN INTRODUCTION

The success of offshoring as a delivery model has been clearly established. The journey commenced with organizations relocating business processes, characterized by high-volumes, labor-intensity and support functionality, to low-cost destinations. In addition to cost-reduction, the first wave of offshoring viz. Business Process Offshoring (BPO) was also driven by the need of organizations to focus on areas of core competency. Processes that did not significantly impact revenues, were lifted, re-engineered and shifted to offshore centers, where “skilled” graduates delivered service. Success was measured based on pre-defined parameters, which encompassed timeliness, error-rates and productivity for each transaction that was undertaken. In this manner, the entire operation occurred in a controlled environment – with no aspect of the process delivery or measurement left to judgment.

Following the success of BPO, organizations gradually began to look upon India as more than just a hub for English-speaking warm-bodies. India is known to export world-class manpower that has become an integral part of the business fabric in global markets. Further, the resurgence in growth of its domestic economy is being attributed to knowledge sectors such as IT, pharma etc. Clearly, India is a gold mine for higher levels of skill, knowledge and experience extending across varied functions and industries. On the basis of these competitive advantages, supported by cost-arbitrage opportunities, India gradually began to emerge as an offshore hub for knowledge services. Knowledge Process Offshoring (KPO) was on its way in. A key driver on the demand side is the changing demographics.

A key concern in Western Countries is the ageing population. By contrast, the median age in India is 24 years.

KPO is not a mere extension of BPO. Its philosophy, objective and service delivery mechanism sets it apart significantly. The core essence of KPO, we believe is not about delegating or sending away processes in order to focus on core competencies. In fact, the premise of KPO is to include into a global delivery team, the required skills that support and guide strategies for an organization’s core processes. Therefore where BPO seeks to exclude processes (i.e. send them away), KPO seeks to include talent. The “inclusive” philosophy of KPO is driven by the global availability of skills and the simultaneous diffusion and aggregation

of knowledge across multiple geographies. Cost-reduction is an additional benefit that organizations happen to derive from including talented people from lower cost geographies. Access to domain knowledge is undoubtedly the key driver for KPO.

However a key question that remains is - what qualifies as a knowledge process? In fact, what qualifies as knowledge? How does one structure a definition for a concept as fluid and free flowing as knowledge? And does the diffusion of knowledge always need to occur through a structured process or a contract?

These are some of the key issues we have aimed to bring out in our report, which traces the journey of growth of prominent service sectors in India along the knowledge value chain. The objective of the report is to highlight the nuances which differentiate KPO from BPO, with respect to the drivers for its emergence, the skill-sets of creativity, judgement and domain knowledge that deliver the service, and how at times, knowledge may even be transferred across boundaries in the absence of a structured process. We believe that any measure of the size of the KPO sector may therefore only underestimate the size and immense potential of India's status as a global knowledge hub.

KPO as an "industry" is in the process of evolution. Every day, companies are discovering new ways of leveraging high-

speed telecommunication networks and the evolution of computing to innovate around how they operate their businesses. This report addresses only some of the areas where companies have begun to drive innovative business models that are based around sourcing and including talent from across the world. However, it is only the beginning of the journey and even as we contemplate the visible progress, task forces are inventing newer applications of KPO.

The KPO "industry" will therefore not have the same definite shape of the BPO industry. We believe that there will be four distinct streams of supply side participants. The first will be BPO companies that will move up the value chain and diversify into KPO. For example, an F&A BPO provider offering financial analytics. The second stream will be companies that practice a profession in the domestic market, offering their services to the global market. For example, a law firm in India, offering services to their counterparts in the US. A third stream will be very specialized groups of individuals who will offer very specialized services exclusively to the global markets, for example a pharmaceutical research team. The fourth stream could well be individuals who choose to live in one place but provide their inputs to a process somewhere else. For example, a mathematics tutor in India could well be providing tuition to American children over the internet. Or a specialized professional may be employed by a global corporation to be a part of a global team, but

the market being addressed by the team could well exclude the market in which the individual lives. Therefore, KPO will not be a distinct industry, as is BPO.

Consequently, the accepted management paradigms and principles that apply to BPO will not apply to KPO. BPO is about size and volume and efficiency. In contrast, KPO will not be about size but depth of knowledge, experience and judgment. The human resource management tools and methods for recruitment, retention and motivation will be very different. The age profile of the KPO workforce will be quite different. As will the psychographic profile. A KPO professional will be motivated by stimulating work content and learning opportunities rather than by parties and prizes. A KPO professional would not like to work nightshifts. KPO professionals would not walk in for walk-in interviews and mass recruitment programs.

In a KPO context, the emphasis will be far more on talent than on physical infrastructure. Therefore, it will be more knowledge centric rather than capital centric. This in turn, will reflect in the ownership structures that KPO professionals would be happy with in their work context. Which in turn will have a bearing on the leadership, independence, development and professional challenge based environment that a KPO professional would seek. KPO professionals would seek more direct participation in the equity structures, as well

as seek to participate in the wealth created by the KPO organization – simply because it is knowledge centric rather than capital centric.

Identification and mitigation of risks in a KPO environment will be far more complex than in a BPO environment. Process risks will not be easily mitigated by automated controls and “maker-checker” controls - because it will not be about repetitive transactions, but about judgment. Controls would therefore be around attracting the right professionals with the right technical competencies and finding ways of keeping them motivated as well as continuing to develop their competencies. A critical risk mitigant would therefore be cultural commitment and differentiating values practiced by the KPO organization. And of-course the willingness of the organization to share the wealth with those who create it.

We would like to conclude by saying that KPO is a huge opportunity for companies around the world to include professional talent from around the world in meeting their business objectives. However, it is not an extension of BPO. The structure of the KPO industry in addition to the management models would be very different. India is a country with a very large base of highly qualified knowledge professionals. Consequently, India would be a very key player on the KPO supply side. While costs in India for highly qualified knowledge professionals are far lower than their

counterparts in the US and in Europe, this would not be the key driver in including Indians in the global economy. The key driver of KPO would be access to the vast professional talent in India, in the changing demographic context of the ageing workforce in the Western world and the consequent shortage of professional skills in

the future. This paper provides brief insight to some of the opportunities that are currently being explored by companies in KPO. However, the potential of KPO is far larger and it continues to evolve and defies tight definition.

2. LEGAL SERVICES

India's emerging prominence in the legal process outsourcing (LPO) segment is being widely acknowledged in global markets. It is being perceived as one of the high-growth knowledge service sectors in India, despite the unavailability of clear traces of its emergence, current revenues, employee base and nature of activities. The relatively under-researched status of the LPO sector may be attributed not only to the complexity in measurement of knowledge as an activity, but also due to the political sensitivity of offshoring legal services.

Our research reveals that corporations are believed to be the vanguard of the movement of legal work overseas. GE laid the foundation for the emergence of structured LPO in 2001, when it became the first foreign conglomerate to offshore its in-house legal work to India. The GE Plastics Gurgaon unit employed lawyers to write and review contracts with vendors.

The India team is estimated to have saved the GE unit, USD 500,000 in its very first year of operation. The success story was widely promoted in the organization, resulting in other GE units also adopting a similar "offshore" approach. Today, GE operates through a subsidiary in India comprising 30 lawyers, who support all critical legal services of GE's units worldwide.

Offshore Legal Services

Then...

- Memo writing
- Word processing
- Document review
- Patent and trademark filing documentation
- Scanning, coding, indexing and abstracting

And Now...

- Legal research (including IP research)
- Reviewing transactional and litigation documents
- Drafting contracts, research memoranda and due diligence reports
- Prosecuting patents
- Negotiations



Source: Pangea3

Since 2001, India has witnessed a steady growth of organizations leveraging the country's competitive advantages in the sector. It has become the source of several

streams of legal service, which commenced with relatively simple processes such as memo writing and litigation support (scanning, coding, indexing and abstracting). Recently, more knowledge intensive and sophisticated processes such as legal research (including intellectual property research), drafting contracts and making determinations regarding responsiveness of the documents and privilege are also being offshored to India. The gradual shift in complexity of legal processes warrants incisive use of judgment and proficiency in legal application, reasoning and research.

It is in this regard that India's commonality with the US and UK law jurisdiction has proven to be a source of competitive advantage to India. The 15,000¹ lawyers produced in India every year are exposed to relevant skills with the entire legal system of the country, from studies to debates to court orders, being conducted in English.

Wage Rates – India vs. US

- *Paralegals and Assistants*
 - India: USD 6-8 per hour
 - US: USD 18-20 per hour
- *Attorneys*
 - India: USD 20 – USD 150 per hour
 - US: up to USD 700 per hour

In addition, the “fractional costs” at which Indian lawyers are available (estimated to be approximately one tenth of US) allow organizations to leverage the significant cost

arbitrage opportunity. The time-zone difference between India and the US enables organizations to operate on a twenty four hour basis, enhancing virtual capacity and therefore revenues.

Consumer Type I: Corporate Legal Departments

- GE
- Oracle
- Sun Microsystems
- Microsoft
- Cisco
- Dupont

For instance, an organization cited an example of how offshore lawyers were able to conduct detailed legal research during India daytime, to be made available for review by onsite counterparts at the start of their business hours.

In keeping with the immense potential of the LPO sector and India's competitive advantage, a large number of organizations have begun to source their legal service requirements from centers in India. For instance, multinationals with large in-house corporate legal departments, are a critical “consumer” constituent of the LPO sector of India. The case study of GE establishing a captive unit in India for its legal requirements is one such example. Other MNC's like Oracle, Sun and Cisco have been outsourcing their patent research and documentation work to Indian BPO's or to their own captive centers in India.

¹ Bar Council of India

An emerging trend in the industry has been the offshoring of legal services by foreign law firms establishing units (typically captive units) in India. This segment also includes domestic LPO organizations that offer outsourcing services to other domestic law firms in the capacity of intermediaries. For instance, Atlas Legal Research, a US-based LPO is believed to have pioneered the approach of intermediaries sourcing their manpower requirements from offshore destinations such as India. Lawyers in its India offices of Bangalore and Chennai, allow Atlas to price its services at approximately 60% lower (USD 60 per hour as compared to USD 350 per hour at the typical US scale)² than competing law firms in the US. Atlas' lawyers in India study legal precedents in state laws to craft arguments in a trial brief, made possible due to the online availability of the US law and relevant exposure during their education. Employees are carefully recruited and trained, with legal briefs being screened and edited by US counterparts to ensure quality. In addition to low costs, Atlas believes that a significant advantage of offshore lawyers is also due to their fresh perspective of jurisdiction, with a

Consumer Type II: Foreign Law Firms and other LPO's (Intermediary Organizations)

- Atlas Legal Research
- Allen & Overy
- Baker & McKenzie
- Hammonds Direct
- Lawwave
- AMLT Synergies

² www.law.com

number of innovative solutions emerging from the India centers.

Legal publishing organizations are also becoming an increasingly critical consumer segment of offshore legal services from India. West, one of the best known names in legal publishing (a unit of Canada's publishing behemoth – The Thomson Corporation) has established a pilot unit in Mumbai where a team of Indian lawyers prepare summaries of unpublished US court decisions. The team in India supports the 100-man team of legal editors in the US who review and prepare summaries of major points of law for use by lawyers doing legal research. Work produced by the India center in the initial stages was reviewed by peers in the US, which even resulted in situations of increased costs and inefficiencies. However, with prolonged experience and exposure, on-the-job training from West instructors in India and a strong system of supervision and feedback from US counterparts, West envisages the offshoring initiative as a significant cost-saving opportunity for the organization and its clients.

Consumer Type III: Legal Publishing Organizations

- West/Thomson Corporation

Several different operating models are emerging to service the demand from customer segments identified above. Captive units are the preferred mode of offshoring for organizations offshoring high-

end critical work, as in the case of GE. In addition, most foreign law firms in India operate through this structure, for want of greater control on areas related to their core competence and business. Issues relating to client confidentiality and risks of unauthorized practice of law are also some of the key reasons for operating through the captive mode.

Supplier Type I: Captive Units

- Legal departments of GE, Cisco, Sun, Microsoft etc.
- Bickel & Brewer
- AMLT Synergies

However, outsourcing to third-party service-providers is also a popular mode of offshoring, in light of the advantages of greater flexibility, scale and range of expertise available. These service-providers may be arms of law firms (domestic or foreign) providing offshore legal services, pure-play offshore legal service providers such as IP-Pro, Intellvate etc. or BPO third parties who also provide legal services such as EvalueServe and OfficeTiger. While most service-providers have established their presence in the recent past to cater specifically to the offshore market, some well-established domestic legal firms in India have created separate “offshore” divisions to tap the burgeoning growth of the LPO market. For instance, the Mumbai-based law firm Nishith Desai Associates recently incubated IP Pro, an offshoring service supplementing its core business of advising U.S. clients on India’s legal system. Its staff

of eight paralegals in India drafts U.S. patent claims, which are checked for quality by a domestic law firm. Delhi-headquartered Kochhar & Co, is also believed to have created specialized outsourcing departments.

Supplier Type II: Third-Party Units

- *Pure-Play Offshore Service-Providers*
 - Lexadigm
 - Lawwave
 - Atlas Legal Research
 - Pangea3
 - Variante Global
- *Arms of law-firms providing offshore services*
 - IP-Pro (Nishith Desai Associates)
 - Patent Metrix
 - Intellvate (Schwegman, Lundberg, Woessner & Kluth)
 - Kochhar & Co.
- *BPO Service-Providers also providing Legal Services*
 - OfficeTiger
 - Xansa
 - EvalueServe
 - Manthan Services

The ancillary outsourcing business model, where independent outsourcing providers and law firms enter into joint ventures or contractual arrangements to market offshore services to clients, is a relatively recent mode of operations. The most prominent case study in this regard is the joint venture between Hildebrandt, a premier legal consultancy firm, and OfficeTiger, a leading outsourcing vendor in India for legal services such as research and document review.

With the legal services industry in the US estimated to be a USD 166 bn behemoth (in 2003)³, employing approximately one million trained attorneys and 500,000 support personnel such as paralegals and legal assistants⁴, the opportunity for offshoring to India abounds. However, perceived threats to the growth of LPO also exist. Some clients cite issues of client-lawyer confidentiality and quality control as factors that may potentially thwart a full-blown LPO revolution comparable to BPO. Further, legislations by the US that mandate that only lawyers licensed in the US can give legal advice on American law may severely restrict the types of legal work that can be performed by Indian lawyers. It is for these reasons that clients often hesitate to disclose the adoption of an offshore strategy, and the nature of legal services offshored. Service-providers are also unwilling to disclose client names and billing rates.

In this context of “undisclosed LPO operations” of organizations, it is essential to mention that estimating the size of the legal KPO services segment in India is indeed complex. The variables are several – including what qualifies as KPO, who is actually offshoring, what pricing models apply etc. What is more essential is to highlight that in spite of sensitivities and complexities in offshoring of legal services, the cost and quality advantages that Indian lawyers are able to provide, will be a significantly compelling factor for legal offshoring to continue with its undisclosed, presumably high-growth trajectory.

³ Euromonitor

⁴ CNN Money, October 2004

3. ENGINEERING R&D

India is rapidly assuming a leadership position as an industrial and engineering design hub for multinationals. As a sample, Airbus and Boeing outsource design work to Infosys. Construction machinery major Caterpillar, has set up its design hub at Chennai. Intel is working on chipsets in Bangalore. Apple has approached National Institute of Design to work on a handheld computing device. Some Nokia mobiles are designed here.

The Offshore Engineering and Design (E&D) industry of India started off far from where we see it today. At the onset of the 1980's, the sector catered primarily to offshore requirements of high volume, low value activities such as scanning and digitization of engineering drawings, migration of computer aided design (CAD) from one system to another etc. The driver for offshoring in these situations was largely cost-related, as the high-volume activities required limited application of domain knowledge. Even then, however, there existed a few organizations that foresaw the unlimited competency in Indian engineering talent and established captive centers to leverage the "design" skills available. For instance, one of the first entrants - Texas Instruments (India) established its captive center in Bangalore in 1985, to carry out activities of chip design.

During the 1990's, India's IT prowess further reinforced its status as a knowledge hub. This gave a critical thrust to the Offshore E&D industry assuming a form closer to what exists today. The sector gradually

E&D Activities:

- *Early 1980's*
 - Scanning and digitization of engineering drawings
 - Migration of CAD from one system to another
- *1990's to date*
 - 3D modeling
 - 2D to 3D conversion
 - Finite analysis
 - CFD analysis
 - Technical specifications for tenders
 - Value engineering

witnessed an enhancement of scope of offshored activities with respect to the knowledge intensity and value proposition offered. India centers began to service higher-end engineering activities such as 3D modeling, 2D to 3D conversion, finite analysis, computerized fluid dynamics (CFD) analysis, drawing up technical specifications for tenders, plant engineering, redesigning for improved cost/performance ratio and value engineering. Although all these services find applications across various industries such as telecom, utilities, heavy engineering and pharmaceuticals, India has established a formidable position for

verticals including automotive, aerospace and electric/electronic machinery design.

A key driver that led to the migration to higher-end Offshore E&D activities has been India's world-class capability in providing manpower with skills and intensive domain knowledge – a critical success factor for the industry. Approximately 300,000 engineers graduate from more than 1,400 colleges in India, producing an advantage that few countries can compete with. This large-scale manpower availability also offers scope for an approximate 25% cost reduction. For instance, a typical CAD and computer aided engineering (CAE) project in the US cost \$60 per man-hour, while similar charge-outs in India are in the range of USD 30-35 per hour⁵. The cost-differences are observed to be higher in more knowledge-intensive services such as automotive design, where manpower rates are as high as USD 800 per hour in Europe, as compared to USD 60 per hour in India⁶.

In light of this cost and quality competitive advantage, industry leaders envisage India reliving the success of the IT industry, and being positioned as a design-outsourcing hub for global markets. The tight linkage of this sector to manufacturing is expected to lead to India being viewed as one of ideal destinations for "knowledge-intensive" offshore manufacturing. This is being touted as the second wave of offshore manufacturing that will ride on the

availability of skilled manpower, rather than cost arbitrage.

To take advantage of the current and upcoming "boom" in the E&D outsourcing domain, several companies have established their presence in India.

Captive Units in E&D India:

- Bechtel
- Flour Daniel
- Ford
- DaimlerChrysler
- General Motors
- Caterpillar
- Texas Instruments
- Motorola

A highly active supplier segment is that of captive units, comprising the units of engineering, automotive, aerospace, ICT and other industrial majors such as Bechtel, Ford, Daimler Chrysler, General Motors, Caterpillar etc. Another example is that of Emerson, a USD 15.6 bn US engineering and technology corporation that has established its design-engineering center in Pune. From a headcount of 16 in 2003, the center now employs over 200 professionals, with expansion planned to 600 by the end of the year. The ongoing ramp up makes the India center, Emerson's fastest growing center across the globe. It is the organization's first and only corporate wide design centre, designing products that are used at 27 divisions of Emerson worldwide⁷.

⁵ Outsourcing Times

⁶ T-Time Magazine, 2005

⁷ Tata Technologies

E&D by Indian IT Companies:

- Tata Consultancy Services (TCS)
- Wipro Technologies
- Satyam Computer Services
- HCL Technologies
- Infosys

IT vendors have also leveraged their skills in the engineering domain, coupled with project management and global service delivery, to become important players in this space. For instance, currently, Wipro has a team of 6,500 engineers in the product design and engineering division – a growth of 40% over the last year. Approximately one third of its revenue comes from this segment. Satyam Computer Services has seen both its revenue and team size for the engineering services division double in the last two years despite offering engineering services for a decade. Today, engineering design services account for 5-6% of its total turnover. Even Tata Consultancy Services (TCS), which entered the engineering and product design space in the early '90s, derives approximately 7% of its annual revenue from design, and forecasts a contribution of 10% by the end of FY 2005-2006⁸. An industry trend reveals that IT providers prefer to develop deep competencies in specific verticals, and provide end-to-end services for those verticals. For instance, HCL Technologies has a high focus on the aerospace vertical and offers services such as conversion, drafting, modelling for product definition,

modelling for analysis, product design, analysis, prototyping, testing and validation, tooling and even limited manufacturing of prototypes. It envisages an annual growth of 150% from its engineering division, which currently contributes revenue of USD 5 mn.

India also has specialist engineering services vendors, comprising a relatively newer set of firms such as Nielsoft, Sierra Atlantic, Geometric, Plexion and Infotech Enterprise. QuEST is an example of another specialist vendor with expertise in the areas of turbo machinery design, automotive engineering design (both at component and system levels), engine design and analysis, global fabrication services and detail engineering support for plant design and layout.

QuEST employs over 700 employees, of whom 10% are doctorates and 40% post-graduates. It services a number of Fortune 500 clients such as GE Power, General Motors, Ford, Nissan, Honda and Fujitsu, and actively supports the establishment of EDC's (engineering design centers) for multinationals. In June 2005, Smiths Aerospace engaged the company for the setting up a dedicated Offshore Engineering Center (OEC) in Bangalore. The center will provide support operations such as detail design, engineering analysis, numerical control (NC) programming, technical publications, reliability and maintainability testing. QuEST has also set up an engineering development centre (EDC) dedicated to jobs for Pratt and Whitney, a leader in the design and manufacture of turbine engines.

These service-providers cater to global demand, the source of which extends across geographies, verticals and service lines. Organizations, irrespective of industry or

⁸ Rediff

size, are constantly required to make substantial investments in designing new products and modifying older versions. While cost-reduction is critical, it is also necessary to increase product differentiation to stay competitive. These market conditions have not only created the demand for offshoring as a cost-optimization mode, but also for the ability to operate on latest technologies. For instance, the E&D industry has witnessed a definitive shift from 2D to 3D designing, due to the long-term cost effectiveness, ease-of-use, time-to-market cycles and powerful modeling capabilities of 3D software. In this context, offshoring allows global organizations to tap manpower with most relevant skills required by products and technologies. In addition, the time zone difference with offshoring also works to India's advantage, facilitating faster pace of product development, progressing on 16-hour global shifts.

Of all the verticals of prominence in India including aerospace, automotive and electrical design, the automotive sector requires special mention. Global automakers are increasingly turning to India for sourcing a wide range of needs that include designing models meant only for the global markets. Automotive manufacturers are facing a situation of tight cost and time-to-market pressures as a result of which controlling R&D costs has now become more critical than ever before. The automotive segment spends an average of 3-5% of its annual revenues on R&D activities, of which

engineering design forms a significant part. Today, the car manufacturing development process is almost completely done using CAD/CAM techniques. Given its expertise in IT and an established reputation in the global IT industry, India is clearly the destination of choice. Auto majors like Ford, General Motor, Cummins, Johnson Controls, Nissan, Toyota and BMW are already outsourcing engineering design work to India either through captive centers or third party service providers. Domestic auto majors have also diversified to provide engineering services to global auto-majors. For instance, Tata Technologies was carved out of Tata Motors and positioned as a high-tech supplier to the global automotive community. It provides engineering and design and IT services to Tata Motors and to automotive companies worldwide for vehicle development. With a team of close to 1,500 professionals, it is serving GM, Ford, DaimlerChrysler, Toyota, Volkswagen and Honda from a dedicated facility in Pune.

Another high-growth vertical is that of the aerospace industry, the current market size of which is estimated to be USD 100-150 mn⁹. Research reveals that this industry has not been an early adopter of core product engineering outsourcing. Till a few years ago, the nature of work being outsourced was low-end, mainly in the areas of verification and validation. However, cyclical revenue patterns, high fixed operating costs and large capital

⁹ Hindu Business Line

expenditure is resulting in a high degree of competitiveness in the market. Behemoths such as Boeing and Airbus have also begun to realize that outsourcing may be critical for them to remain competitive, and have experimented with sourcing full system design work from India. For instance, Infosys played a vital role in designing a portion of the Airbus A380's wing; HCL Technologies will provide software and hardware development services to Boeing for its new 787 Dreamliner project. An often-underplayed driving factor for offshoring aerospace engineering has been the emergence of India as a huge consumer market, with demand projected to be 300 passenger aircrafts in the next 10-15 years. This factor further reinforces the advantage to aircraft manufacturers for establishing design bases in the country – to cater to both localized and global demand.

Industry leaders estimate that the Indian market for offshore engineering design services has been growing at 25-30% over the last five years, and is expected to maintain its growth trajectory. The last 24 months have been particularly significant in terms of growth, witnessing some of the largest deals in the industry. For instance, in December 2004, TCS and Scuderia Ferrari concluded a deal whereby teams of engineers and specialists from TCS provided IT and engineering services for the development of the Formula 1 racing car for the racing season of March 2005¹⁰. This

¹⁰ TCS

deal sent a clear signal to the global markets that the Indian E&D industry was evolving from a low-cost, back-office destination into a preferred supplier of high-end engineering services. However, with a revenue base of just USD 400-500 mn¹¹, the Indian E&D industry has barely tapped the potential of the global outsourcing market, estimated to be USD 7 bn in size, with the potential for process engineering, plant automation and enterprise asset management services still remaining relatively unexamined and unmeasured.

The increasing levels of digitization in E&D and its requirement for a high degree of skill bandwidth for design services are paving the right market conditions for both outsourcing and offshoring, an opportunity that India is uniquely placed to leverage. The TCS-Ferrari deal is only an indication of how India's race to E&D offshoring leadership has begun.

¹¹ NASSCOM

4. MEDICAL SERVICES

The foray into medical offshoring to India commenced in the early 1990's with medical transcription (MT), perceived to be the lowest end of the value spectrum in medical services. These services were high in demand especially in the US, as the local healthcare industry relied heavily on insurance, which demanded detailed medical records for processing of insurance claims. However, the unavailability of trained manpower was resulting in a situation of a growing demand-supply gap in the market. Many entrepreneurs in India started offering transcription services, which involved transcribing of medical records dictated by doctors into a tape or onto a digital voice processor, which were transcribed by Medical Transcriptionists, proof-read and then uploaded back to the doctor's office.

Although the industry was all set to take on a high-growth trajectory, the absence of a front office presence in the US resulted in service providers having to rely on middlemen or secondary sources of information on customer requirements, exacerbating the cultural hiatus and reducing satisfaction levels. Many contracts were withdrawn, and many of the service providers closed shop. A few of the service providers such as HealthScribe, Heartland, C-Bay, however sustained their operations through the downturn with their stronger business models. For instance, C-Bay Systems, believed to be one of the largest medical transcription companies in India with a workforce of 3,500 people, did not adopt the "middlemen" approach choosing instead, to set up its front-end office in the US and focus on building its presence in the market. In parallel, it managed its back-end operations by setting up relationships with

franchisees who were trained by C-Bay and monitored closely as regards their quality of work. It also made acquisitions in the US, which lent stability to the organization's customer base. Novel delivery techniques have also been experimented with to maintain cost-competitiveness. For instance, Spryance strongly advocates and promotes home-based transcription, with 70% of its 1,000-person workforce being home-based transcriptionists¹².

Despite the downturn, MT services may have been India's first tryst with the knowledge-intensive medical services sector. MT employees require specialized skills, which include keen language and listening skills and adequate knowledge of the Language of Medicine. The employees are also required to stay abreast of changes in medical terminology, medical procedures etc.

¹² Global Outsourcing, January 2005

and need the ability to detect medical inconsistencies in dictation. It is the requirement of these very skills that positioned India as a leading destination for offshoring of MT services. The 2 mn English-speaking graduates, operating out of delivery centers with a favorable time-zone difference with the American markets, generate significant cost-reduction and turnaround-time improvement opportunities.

Today the landscape of the medical outsourcing industry of India stands transformed. The underlying change has come with the steady migration of services to the higher-end of the value spectrum. The traditional knowledge-intensive yet non-core health information management activities such as medical transcription, medical coding, revenue cycle management and claims processing have created a robust foundation for the growth of medical services offshoring to India. The offerings of service-providers now also include higher-value activities such as diagnostic services, telemedicine, telepathology, teleradiology, clinical data management and disease management.

Spurred by a shortage of radiologists abroad and increasing demands for sophisticated scans, teleradiology enables hospitals to provide faster and better customer care. In the UK, for example, it is estimated that one in seven posts for radiology remains vacant¹³. The diagnosis if done in India by a

US certified radiologist, can be directly sent to the concerned department of the hospital – saving time, reducing costs and maximizing patient welfare.

Teleradiology Solutions, Inc, Bangalore, a teleradiology consultations provider to hospitals in the US, established its operations in 2003 and provides teleradiology based services over the internet, wherein images such as X-rays, MRI's and ultrasounds are sent by domestic hospitals, via broadband internet to the center in Bangalore. These images are reviewed and interpreted and final reports are sent back to the domestic hospitals, sometimes within 30 minutes in the event of an emergency. With a team including US Board certified radiologists as well as radiologists trained locally, Teleradiology Solutions is licensed in about 30 hospitals in the US, which allows it to provide the service of interpretations of images.

Clinical services that can be outsourced to India include oncology and orthopedic services. Cancer patients can have their tests scrutinized by pathologists sitting in India, who work on the digital images of lab slides. The driver here is not even the faster turn around time, or the cost savings, but better patient care by bringing the best medical minds in the world. The opportunity is big – in the UK, the market for pathology tests is around 3.5 billion pounds, of which 15-40% can be outsourced¹⁴.

¹³ Outsource to India

¹⁴ Global Asia News, 2005

Pharmaceutical companies are also taking advantage of the opportunity. SRL, part of Ranbaxy Laboratories, offers a bouquet of 3,000 tests to choose from, and high-end ones like genetic profiling, oncology tests, HIV and allergy tests. In March 2005, it began commercial work with a big hospital chain in UK after a six-month trial. The lab also does reference range identification for Asians making it easier for collaborative effort with hospitals abroad. SRL handles 2-20 samples everyday at their central reference lab in Mumbai, and has accreditation from College of American Pathologists and is also compliant with FDA requirements.

The shift in the knowledge-intensiveness of activities is a clear indication of the growing maturity of the supply-side of the industry, which has witnessed the emergence of well-established, large players. A few of the second-generation service providers include Accuis, Focus Infosys, and Spryance – all of whom have a presence in the US. Software companies like Cognizant, Hinduja TMT, Ajuba Solutions and Wipro have also incubated medical units from their BPO outfits.

Investment in IT has also been spurred with the stringent regulations in the US on issues of patient information security. HIPPA (Health Insurance Portability and Accountability Act) is one such Act, which has had a profound impact on the offshore healthcare industry. To ensure full compliance with regulatory requirements,

service-providers have developed information systems and workflow management systems that allow the system to assign work in a systematic and secure manner. Global consultants, who certify their robustness and security, typically review these systems.

Apart from security, quality is also a cornerstone for the success of the medical outsourcing sector in India. Training is believed to a key enabler of process accuracy, for which new employees are typically trained for a period of nine months in areas such as listening skills, medical language and other basic transcription skills. They are also to be regularly updated on advancements in the medical field, requiring further training on a periodic basis. Some organizations, such as Wipro Health, are adopting novel techniques to ensure the constant supply of trained manpower. It has entered into an arrangement with the Manipal Institute, Karnataka for the supply of radiologists to carry out services of remote reading. In addition, the arrangement requires the Institute to rotate doctors on a periodic basis, ensuring its employees are continually updated on latest medical developments.

Despite the high training costs, investment in IT etc. offshoring of medical services is estimated to extend a cost saving potential in the range of 30-70%. The highest source of savings accrues from the availability of low-cost manpower. However, service-

providers anticipate a potential reduction in margins in the future with a recent trend of hospitals belonging to a particular group or chain, aggregating transcription work and offloading it to offshore vendors as a single deal.

In spite of the impediments, offshoring of medical services to India is anticipated to witness tremendous growth over the next few years. The driving factor that resulted in its emergence, viz. inadequacy of manpower supply in domestic markets, still exists.

The healthcare BPO segment, estimated to be USD 200 bn business worldwide¹⁵, holds high potential for India, which currently accounts for only USD 110 mn in revenues. With growing maturity of the sector, industry players anticipate India to focus on untapped market segments, including healthcare customer services, e-learning, healthcare knowledge management etc. A futuristic vision of the medical outsourcing industry envisages Indian doctors offering real time consultation on operations done in US hospitals by watching them live on radiophones. Medical outsourcing is definitely here to stay.

¹⁵ The Economic Times, June 2005

5. EDUCATION AND TRAINING

Until a few years, education may have been safely included as one of the services with a significant component of “touch and feel”, and therefore excluded from potential offshoring. Today India is leveraging the abundant availability of skilled manpower, including 2.1 million graduates and 0.3 million post-graduates from non-engineering colleges, and has become a key destination for offshoring of education and training services. Albeit the segment’s current small size, training and education is rapidly on its way to be positioned as one of India’s most high-end and high-growth KPO segments.

Commonly referred to as Education Process Outsourcing (EPO), it is a recent legislation passed by the US government that has interestingly provided impetus to the emergence of the sector. The law called 'No Child Left Behind Act' (NCLB), aims to comprehensively reform the education system in the US and improve teaching standards at schools.

“A third of new teachers in the United States leave the profession within three years, and half leave after five.”
- *National Commission on Teaching and America's Future*

“Nearly 40% of US high schools reported difficulty in filling openings in 2004 with qualified instructors for mathematics.”
- *American Association of Employment in Education*

The Act redefines the federal role in K-12¹⁶ education, by allocating federal funds of approximately USD 500 to USD 1,000 per child for supplemental educational services – including tutoring, for children in “failing”

¹⁶ Kindergarten to Grade 12

schools. This opportunity is estimated to be USD 2 bn in size¹⁷, open to be tapped by both domestic and offshore service providers.

Demand fulfillment by domestic service-providers in the US, seems improbable. This is primarily due to the unavailability of qualified teachers in the country. Research indicates that America needs approximately 120,000 teachers, but the availability is restricted to only 5-8% of that number, with a specific shortage in the streams of Mathematics and Sciences. This situation of a demand-supply mismatch may be attributed to the low regard for the profession and the dismal wage levels – resulting in low rates of admission to and high rates of attrition from the sector.

The situation has been further exacerbated by the stringent qualification tests and overall protectionist sentiment towards the education sector, which has prevented

¹⁷ PENN GSE Perspectives on Urban Education, 2005

migration of labor from offshore locations to be absorbed in the domestic vacancies.

Offshore Education Service Providers in India

- Career Launcher - Tie-up with service providers
- Educomp Datamatics - Tie-up with educational institutes such as schools
- Growing Stars - Retail delivery of educational services

In this overall context, entrepreneurial education ventures from India have sensed the opportunity and begun to tap the burgeoning demand by establishing e-tutoring units. Prominent offshore service providers include Career Launcher, Educomp Datamatics and Growing Stars, each of which operates on distinct service delivery models.

Career Launcher, for instance, subcontracts its educational services to Supplemental Education Service (SES) providers in the US including eSylvan, Smart Thinking, Tutor.com etc. The services offered typically include curriculum design, academic pedagogy, content development and actual delivery. For the US, the focus areas for Career Launcher are law school entrance examinations and the GRE. It also provides tutorial services in mathematics and science for students of Grade 8 and 9. It is believed to have 1,500 American students on its online rolls for Maths tutoring alone, which are serviced by the 10 tutors it has

employed for the US market¹⁸. Career Launcher anticipates an increase in the number of students on its rolls, as technological improvements are implemented and demand from NCLB rises.

Educomp Datamatics on the other hand, follows a direct model, and has approached and tied up with schools directly. Growing Stars, a small company headquartered in California with a delivery center in Kochi, offers direct retail services through its 20 Indian tutors. Lower labor costs allow the company to offer one-on-one services for \$20 an hour, significantly less than the \$45 to \$80 an hour charged by bigger tutoring companies in the US¹⁹.

Technology enablement for delivery of services is critical, with all service providers investing heavily in infrastructure. The technology used is VoIP (Voice over Internet Protocol). Along with this, proprietary software is used by the tutor and the student, with two-way voice interaction as well as a chat room (for text messages); interaction over this software is on an electronic whiteboard format. While it is a one-on-one session for the student, the tutor usually attends to three students simultaneously on different links. In addition to infrastructure, training is also perceived to be a critical success factor. Indian tutors undergo training in the areas of accents, US teaching methods, online training methods and other behavioral aspects with a view to ensure

¹⁸ CS Monitor

¹⁹ USA Today, May 2005

that the linguistic and cultural gap between the student and the tutor is minimized.

However, a number of concerns – from political and operational aspects exist with respect to the emergence of this KPO segment. For instance, critics question issues on the lack of tutoring standards and the ability of tutors to bridge cultural and physical gaps during classes. The use of federal NCLB funds for creation of offshore employment, with absence of adequate oversight measures has also emerged as a controversy.

Despite the voiced concerns, industry leaders do not anticipate a reduction in the

level of offshoring of education services. The advantages, they believe, are several – ranging from cost-saving opportunities to the perceived higher quality of education. However the most critical aspect to be considered is the availability of requisite manpower in offshore locations, in a situation of inadequate supply of domestic skills.

With a workforce of 4 mn teachers, of which 500,000 are adequately computer-literate, this relatively niche market of offshore education presents a lucrative opportunity for India, which can play an instrumental role in the true globalization of the education industry.

6. WRITING AND CONTENT DEVELOPMENT

Offshoring of publishing is believed to have commenced in the seventies when publishing houses like Macmillan, Oxford University Press and Thomson established captive units in India for typesetting work. The objective was primarily to leverage the availability of low-cost manpower in India. Subsequently, entrepreneurs in India sensed the potential and began to establish smaller units to cater to the publishing requirements of global players.

For instance, PureTech was established in Pondicherry (close to Chennai) in 1988, engaged in data processing work for publishing houses. Around the same time, the Gupta family established TechBooks in the US, for carrying out low-value jobs like printing out-of-print books, typesetting and data processing work for publishing houses. Gradually by 1992, TechBooks built up sufficient relationships to warrant the setting up of a Delhi offshore center. In the same year, Datamatics Technologies also spotted an unusual niche opportunity from the Iraq War, wherein it converted legal law cases from paper to electronic and HGML format. These ventures set the stage for the commercialization of the publishing process, and showcased the then nascent concept of offshoring.

With the advent of a global slowdown, and the growth of the Internet, the sustainability of business models of publishing houses began to be questioned. Traditional customers were being weaned away by online retailers and publishing houses realized that it was imperative to not only

undertake measures to reduce costs, but also provide services on complementary media such as multimedia and the internet. This re-orientation in approach resulted in a significant amount of consolidation in the publishing industry in the eighties and the nineties, creating giant conglomerates. Large amounts of content needed to be re-purposed for making it suitable to electronic media, for which an abundant supply of technical talent was necessary.

Offshore Publishing Services:

- Editorial services
- Content-delivery service
- Page-making
- Typesetting
- Digitization of content
- Data enrichment and Warehousing
- Pre-press work
- Proofreading
- Template designing
- Text composition
- Data conversion services
- E-publishing
- Cross-media composition (including print, Internet and wireless)

In this situation, offshoring emerged as a viable solution – allowing publishing houses to leverage opportunities of cost-arbitrage,

and simultaneously address concerns of domestic manpower unavailability.

In this manner, offshoring as we define it today, commenced. The initial cost-related experiments included offshoring of low-end, repetitive tasks such as data conversion, archiving, data indexing and tagging. Gradually, the quality provided by Indian vendors made publishing houses reconsider offshoring and outsourcing as a strategic option. This resulted in the nature of offshored tasks moving up the value-chain to include lay-out, composition and proof-reading, a large share of which was for SSTM journals (scholarly, scientific, technical, medical journals) and academic books.

Many categories of customers avail offshore publishing services from India including publishing houses, educational institutes, content developers, information aggregators, professional societies, government agencies, universities and corporations. Some of the well-established clients for most service-providers are Reed Elsevier, Blackwell, Pearson, Academic Press, University Presses, Taylor and Francis, Thomson Learning, McGraw Hill, John Wiley, etc.

Work may be outsourced to offshore captive units or third-party units. In the offshore captive model, large publishing houses establish wholly owned subsidiaries, which cater to a major share of their offshore service requirements. However, some

services, such as conversion of content into digital form or certain editorial work, may still be outsourced to third-party players. A few large players such as TechBooks, OfficeTiger, Datamatics Technologies, Integra Software etc dominate the third-party service-provider space in India. This relatively concentrated industry structure may be attributed to the high-entry barriers that are perceived to exist in the publishing industry. These barriers include scale, relationships and domain knowledge – which prevent the entry of new players, or the diversification of existing players into the publishing space. However, smaller players are also known to survive, with the practice of subcontracting.

The publishing outsourcing work being done in the country is often time-bound and process-specific. The work rates charged by companies are either on a per-hour or a per-page basis, depending on the service offered, and the type of business model. The rates can range from \$7 to \$18 per hour or \$7 to \$22 per page, with savings in the range of 40-50%²⁰. The cost-saving opportunity arises primarily due to the availability of skilled manpower in India, which includes an annual supply of 2 mn English-speaking graduates. In addition to superior language skills, publishing also requires functional and technological domain knowledge. For instance, TechBooks, a USD 50 mn publishing service-provider has approximately 2,300 employees in India.

²⁰ The Hindu Business Line, April 2005

The company hires across various verticals - programmers and people proficient in languages like Quark and XML, and middle management people from the manufacturing vertical, besides science professionals, PhDs, and English scholars²¹. Indian vendors have scored on their ability to deploy technology effectively to re-engineer processes and bring about efficiencies and improve turnaround-times. For this, service providers such as Macmillan have invested considerably in their technology team, which comprises 50 software professionals.

Publishing KPO is high on the radar today. 2004 witnessed significant activity in the sector with several new offshore initiatives. Reuters set up their back-office operations in Bangalore, Time Warner's magazine, Business 2.0 is exploring the option of outsourcing editorial content. IDG has also announced its intention to invest USD20 mn in its India operations, which will in turn act as a service for its global operations²². These captive units will carry out work at the high end of the spectrum - a clear signal of the movement from BPO to KPO.

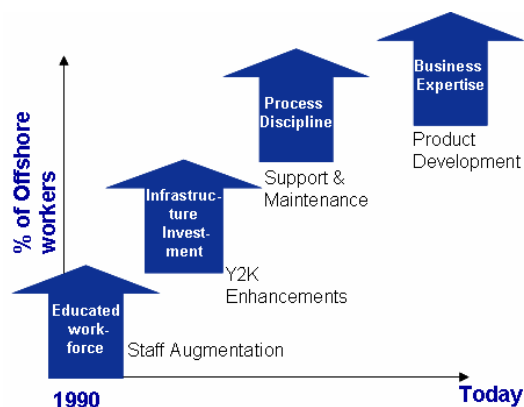
²¹ TechBooks

²² Global Outsourcing, May 2005

7. SOFTWARE PRODUCT DEVELOPMENT

India's established legacy as a high-quality, low-cost services IT services powerhouse is steadily supporting the growth of the sector into a more recent phenomenon, of sourcing software products from India. The expansion of the global market for electronic devices due to increasing levels of convergence, digitization and cost reduction has also played a critical role in driving the development of the embedded systems and software products – key segments of the software R&D sector in India.

Since the early 90's, a number of multinational product-based companies such as Texas Instruments, IBM, Hewlett-Packard have engaged in sourcing some of their product development activity from India, traditionally restricted to the lower-end activities of coding and testing. At that time, global independent software vendors (ISVs) were faced with increasingly volatile market conditions, pressurizing them to simultaneously upgrade and widen their product offerings and minimize costs. Most organizations had already undertaken enterprise-wide cost reduction initiatives, and believed that there was only marginal scope for further cost reduction by operating within the same business model. Growth was therefore being constrained by decreasing profitability. With the advent of the internet and enhanced communication modes, it became possible for organizations to conceive an alternate solution in the form of offshoring, which would involve the use of fewer and lower-cost global professionals.



Source: NeoIT

Gradually, India witnessed the emergence of large-scale vendors, who invested in world-class infrastructure and process excellence through quality programs such as Capability Maturity Model (CMM) and six sigma programs. India leveraged the investments by playing a critical role during the Y2K era, and positioned itself as a key contender in the growing offshore software product segment. The advancements continued with India-based development centers continually demonstrating the ability to deliver software products characterized by quality, technological superiority and low-cost. The significant maturity of offshore capabilities in India has become the foundation for next-generation end-to-end

product development. R&D offshoring is no longer considered a short-term measure for cost savings – the focus has steadily shifted to long-term competitive advantage, an integral part of the global corporation's strategy. Today, there are over 100 multinational organizations that have established development centers in the country to support their global R&D initiatives. Organizations such as Microsoft²³, Adobe etc. have identified India as one of their key locations for global R&D, establishing one of their largest development centers in the country.

The key advantage India has over other economies is the establishment of a mature R&D ecosystem creating favorable conditions for the growth of innovation. The most critical element of this ecosystem is the availability of high-quality service-providers – including third-party suppliers, captive units and joint ventures.

Software development is one key industry where the captive segment of service-providers, is nearly, if not better established than the third-party segment. A number of Fortune 500 organizations such as SAP, HP, IBM, Adobe, Intel and Microsoft carry out R&D activities for their core products and technologies from their India centers. A recent study by PwC revealed that organizations indicate an initial preference

²³ Microsoft India Development Center (MIDC) is the largest R&D center outside its company's headquarter in Redmond

for this high-risk, high-return model – for want of greater control on cost, quality and most importantly – Intellectual Property (IP). In addition, a large number of the organizations operating through the captive mode in India had entered the country in the early nineties, at a time when the third-party service-provider segment was nascent. In this industry context, the only option therefore, was to operate out of captive units.

Oracle Center in Bangalore was established in the early nineties, as a result of the positive experience that senior management had with Indian software professionals working onsite. To capture the talent and quality at source, it was decided to operate a center in India itself. The center initially supported the non-strategic operations of the global teams, including development work for secondary products or for core products on secondary platforms. Today the center employs approximately 1,200 engineers and is a critical element of all core product.

But now, the third-party service provider landscape in India is also well developed, with respect to the number of players and their profile. Amongst many others, it comprises of globally renowned names such as Infosys, Wipro, TCS, Satyam and HCL Technologies – the largest players in India's IT industry. Each of these organizations employs over 20,000 employees servicing global clients and garnering international recognition. Their commitment to quality and security has even allowed the service-providers to position themselves as

“extended partners” to organizations operating through captive units in India. As an example, some captive organizations chose to outsource specific activities of the SDLC (software development life-cycle) to third-party service providers, based on core competencies of the service-provider and the requirement to leverage economies of scale.

Other than the opportunity to leverage economies of scale, a key driver for the emergence of offshore software development over the past decade has been the ability to leverage time-zone differences and adopt “Follow-the-Sun” strategies. With shortening product life cycles, organizations are being forced to introduce product innovations and enhancements at a rate that ensures customer satisfaction and enables profitable operations. The continual access to highly skilled manpower and 24*7 operations due to time zone differences, allows organizations to leverage the “window of opportunity” of products – the span of time during which innovations must reach customers for market-leadership. New products are realized faster through global development and testing cycles taking place simultaneously across multiple facilities. Reduction in time to market also allows multiple cycles of product development to take place, thereby enhancing overall revenues for organizations.

By accessing some of the best talent globally, organizations offshoring software

product development, are motivated by the potential benefits of enhanced product quality. India houses world-class technical institutes such as the IITs, which produce skilled talent that may be recruited by the industry. There are approximately 253 universities and over 13,150 higher educational institutions producing 2.46 million graduates including 300,000 engineers and 150,000 IT Professionals every year in India²⁴. Low training costs in India allow these professionals to be continually updated on emerging technologies, a critical success factor in an era of shortened technology life cycles. Further, with 87 of the world’s 117 SEI CMM Level 5 certified service-providers located in India, organizations are able to take advantage of their availability of robust processes, documentation etc. and focus on areas such as continuous process improvement.

Perceived to have been the sole motivation for offshore software development, the benefit of cost reduction is steadily being outdone by the other advantages. However, cost reduction today retains its status as a necessary condition for offshore software product development. The key source of this advantage typically accrues from access to low-cost manpower. For instance, the average annual salary of programmers in India is approximately USD 7,500, 88% lower than the cost of similar expertise in the United States, at approximately USD 65,000.

²⁴ Investment and Trade Promotion Division

In addition to the lower salary costs, other sources of cost advantage may include (with the actual quantum of cost savings dependent on the mode of offshoring viz. third-party outsourcing, captive etc.) cost of recruitment, fixed costs such as office space, computers, office equipment and telecommunications, requirement for bench strength due to the adequate and timely availability of manpower etc.

As is evident, offshore software development emerged to access the best global talent – irrespective of geography. There are numerous examples, which indicate that offshoring of knowledge intensive activities such as software development may have commenced even before BPO had seen the light of day. What is therefore questionable is whether India has eventually moved up the value chain of offshoring - for knowledge activities may have even set the foundation for BPO.

8. PHARMA R&D

The global pharma industry stands at crossroads today. Although approximately USD 40 bn is spent annually on drug development, pharma companies have realized that periods of rapid growth and unprecedented profits are now far and few. Researchers are finding fewer and fewer unique molecules, ending the era of “blockbuster drugs” and increasing development timelines, sometimes to as long as 14 years.

Drugs that are in fact successfully commercialized often fail to reach their maximum profit potential. This may be related to reduced time on the market - related to manufacturing problems, withdrawal of the drug due to post-marketing safety concerns or simply because patent expirations are leading to generic erosion of the market. For instance, of the 44 products generating blockbuster sales in 2000, 33 will lose patent protection in the US before 2007, exposing approximately \$45.5 billion of US ethical revenues to generic competition²⁵. The most crucial concern however, is that rising R&D costs coupled with regulatory pressure for drug price stabilization, are eating away at future profit potential.

Enter India - a hub for all functions across the pharma value chain. Starting with contract manufacturing for API's and generics in the early 1990's, India today is a force to reckon with in the higher-value functions of drug discovery, research and development and clinical research. When

the product patents on pharma products were abolished in India in 1972, the Indian industry was not a significant player either in the domestic or the overseas market. Its activities were largely confined to reverse engineering and thriving on developing new processes for the existing products, for servicing the domestic market. It is during this period that some of pharma's stalwarts of today, such as Ranbaxy, Dr Reddy's Laboratories, Cipla, Nicholas Piramal and Wockhardt emerged.

However, over the last 25 years, the very face of India's pharma industry stands transformed. Today the USD 7 bn industry (including exports of USD 2.5 bn)²⁶, has over 400 large and small pharma companies, not only catering to over 95% of domestic demand, but also emerging as suppliers to international markets. The global output of the Indian pharma industry ranks 4th in terms of volume and 13th in terms of value. More importantly, it has also steadily climbed up the value chain from being a traditional provider of sales and

²⁵ Financial Express, September 2004

²⁶ Rediff

distribution support to global pharma majors, to generic and contract manufacturing and finally to undertaking innovative drug discovery and development support. The enormity of the industry brought it global recognition as a low-cost, high-quality drug producer, which gradually paved the way for both offshoring and outsourcing to commence.

With respect to India's competitive advantage to cater to the offshore pharma R&D sector, it is both difficult and unfair to isolate one factor that may be given the credit. A confluence of factors including well-established suppliers, the availability of low cost and highly skilled scientists and research personnel, presence of a large number of patients with ethnic diversity, and even India's renowned status as an IT-hub, have all collectively contributed to the emergence of India as a pharma R&D hub. These factors constitute an ecosystem, which in its entirety is the source of India's unique strength. The Government of India has also extended immense support to the sector, through various investment incentive policies ranging from tax holidays, to subsidized infrastructure and duty exemptions.

To leverage the scale and quality of India's ecosystem, multinationals such as AstraZeneca, Novartis, GSK, Bayer AG, Roche, Eli Lilly etc. have established their own clinical research infrastructure in the country. The growth of investment by the

multinationals has been steady – with initial small-scale investments for non-core activities, and the gradual migration to heavier funding for centers supporting global R&D initiatives. For instance, Pfizer started clinical research operations in its Mumbai center in 1995, added a biometrics unit in 1998 and a formulation development group for its veterinary division in 2004. Till date it has invested USD 13 mn in its India R&D center, which employs over 100 scientists²⁷.

Some of the largest capital investments that have been made in R&D in India have been by the large domestic pharmaceutical companies such as Ranbaxy, Zydus, Cipla, Glenmark, Wockhardt etc. These investments have witnessed considerable success, with a total of 855²⁸ drug patents being filed in the fiscal year ending March, 2004, up from virtually zero 10 years ago. Indian pharma companies also topped drug filings with the US Food and Drug Administration (FDA) in 2003, having filed a total of 126 Drug Master Files, accounting for 20% of all drugs coming into the US market, higher than Spain, Italy, Israel and China.

However, the segment of the Indian pharma sector that has witnessed the maximum activity and interest over the past few years is that of contract research. Contract Research Organizations (CRO's) cater to the outsourcing requirements of global pharma by offering a wide range of clinical

²⁷ Touchbriefings.com

²⁸ Indian Ministry of Science of Technology

development services, from expertise in bioavailability and bioequivalence studies to clinical trial management and monitoring, data operations, reporting, and regulatory support. Some of the local pharmaceutical companies have established independent contract research units in the discovery and early chemical development space. These include Clinigene promoted by Biocon, Aurigene set up by Dr Reddy's, Wellquest, established by Nicholas Piramal, ACT set up by the promoters of Suven Pharmaceuticals and Reliance Research Services flying the Reliance Industries flag.

Numerous smaller companies in the clinical research domain have also proliferated in the recent years. Some of these, like Vimta Laboratories and Lambda Therapeutics have grown from origins in the bioavailability/ bioequivalence business supporting a thriving generics industry at home and growing through foreign currency earnings from international clients. Part of the reason for the mushrooming of local CRO groups is the low level of fixed investment needed to start a clinical research services operation. Easy migration of professionals from the medical departments of multinational subsidiaries to man the CRO industry has further helped the process.

The interest of international CROs in setting up operating units in India is also believed to be at its peak. At last count, over a dozen well-known names had acquired the 'India-leveraged' tag. Quintiles began operations in

Ahmedabad in 1997 and later set up offices in Mumbai and Bangalore, maintaining a lead over rivals with a four to five-year head start. Others that followed include ClinTec, Covance, Pharm-Olam, Pharmanet, Omnicare, PPD, Icon, Chiltern and Kendle. Often, international CROs have used alliances with local CRO outfits as an entry strategy, but have soon realised the importance of having an independent presence in the market. Almost all players have leveraged India beyond clinical operations, offering data management services, statistics and reporting as key capabilities, and sometimes venturing into specialized services such as a central laboratory or an electrocardiogram (ECG) interpretation service. Some, like Catalyst Clinical Services, also run fee-based distance or on-site education programmes in clinical research.

Large information technology (IT) and backoffice processing offshore (BPO) service providers such as Accenture and Cognizant are also taking centre-stage with major off-shoring alliances with Wyeth and Pfizer for services including data management, programming, statistics and reporting.

Of all the specific service-offerings of India's offshore pharma R&D sector, clinical trials are an area, which has generated phenomenal interest. Estimated to be a USD 70 mn segment, India is believed to inherently possess sources of competitive advantage for clinical trials. The key factor

has been the availability of a large pool of patients, from multiethnic and multiracial backgrounds, and their exposure to a number of diseases including malaria, cancer, hepatitis etc. The high population and low hospital density has also led to India having one of the best and fastest subject return rates in the world – significantly reducing overall timelines for the clinical development process. For example, ClinTec International claims to have decreased its time for recruiting patients to half the time it takes in the US by conducting clinical trials in India. The time for data analysis is also shorter.

Advantage India in Clinical Trials:

- Large patient pool
- Diverse patient pool – from multi-ethnic and multi-racial backgrounds
- Highest subject return rates
- Shorter time for data analysis
- Reduced costs
- Skilled manpower availability

The biggest advantage, however, is that of reduced costs. A study reveals that trials for a standard drug in the United States can cost about \$150 million, while a similar drug could be tested in India at approximately half the cost. This is critical in an era when India's increased regulatory control and acceptance of the International Conference on Harmonization (ICH) guideline for good clinical practice further enhances India's reputation as an ideal location to conduct clinical trials. Pharma giants are also magnetized by India due to the fact that the country offers nearly 700,000 specialty hospital beds, 221 medical colleges and

skilled English-speaking medical personnel²⁹.

Today all big global pharma names like Novo Nordisk, Aventis, Novartis, GlaxoSmithKline, Eli Lilly and Pfizer have begun clinical drug trials across various Indian cities. Roche, the Swiss pharma major has also set up clinical trial sites in India as part of its global trials for treatment of a particular variant of lung cancer. One of the reasons for considering India is that it has a vast patient population infected by this type of lung cancer, which is primarily triggered by the use of tobacco products. India is also being considered a prospective site for Roche's future clinical trials involving new drugs and therapies for blood cancer.

India's journey in the pharma R&D segment has only just begun. Estimates reveal that for the year 2002, clinical trials outsourcing may have generated revenues between USD 30 – 70 mn, with unclear explanations for discrepancies in industry size estimations. What is undisputed, however, is that every year, India produces three million graduates, 700,000 post-graduates and 1500 PhDs³⁰. What is undisputed is that tremendous cost arbitrage opportunities exist for offshoring of pharma R&D. What is undisputed therefore, is that armed with sustainable sources of competitive advantage, India will only continue to grow as a knowledge base for the global pharma industry.

²⁹ Asia Times, July 2004

³⁰ Confederation of Indian Industry

9. MARKET RESEARCH, CONSULTING RESEARCH AND ADVERTISING

With burgeoning competition, increases in cost pressures and a growing number of brand-switching customers, organizations are realizing that market research is an integral part of a successful business. The markets no longer give second chances – so making sure that the right raw material is being sourced to produce the right product, sold to the right customer in the right way is more important than ever before.

Market research (MR) has always been an approach adopted for collecting information on customers, competition, suppliers etc. Retained in-house, most organizations relied on voluntary customer feedback and reports submitted by sales personnel to gauge market situations. Only in specific instances of release of a new product, would third-party MR firms be employed, primarily for collecting realms of data. However in an era of information overload and short product life cycles, organizations realized that it was risky to rely on sporadic in-house feedback or spend excessive time in analyzing data, a large share of which may in fact, be irrelevant. The key issue facing organizations therefore was gaining the right insights, at the least costs and at the right time to ensure that strategies adopted were in line with market conditions.

It is in this context, that the business case for both outsourcing and offshoring market research to India became compelling. The source of competitive advantage was the sheer volume and cost-competitiveness of

requisite skills, with over 2 million English-speaking graduates and approximately 70,000 management graduates³¹. To experiment with the concept of offshore MR, the journey commenced with only data collection and data cleaning processes where secondary sources of information and organization specific knowledge-bases were reviewed, databanks were put together, abstract and summaries created. It was realized that offshoring was generating multiple sources of value, including reduced costs, and rapid turnaround times. The success story allowed organizations to further expand on the scope of offshore MR activities – which led to migration to higher-end, more knowledge intensive activities, including analytical services. The nature of activities therefore came to include a wide-range of consumer and industrial surveys, data analysis through statistical tools and techniques, report presentations etc. The essence of MR was shifting from information capture to its transformation into knowledge.

³¹ Rediff, February 2004

The profile of suppliers in the offshore MR sector in India is wide. For instance, there are multinational market research firms that have established offshore centers in India.

Frost and Sullivan, is a Silicon Valley, California-based market research and consultancy firm. It started with outsourcing back office processing work to India in 1999, and eventually set up an analyst team at its Global Innovation Center in Chennai in 2000. The center currently has about 160 staff of which half are analysts working in the various industry practices of F&S, while the other half work on back-office processing

Global consulting majors are also leveraging the talent base of India, by conducting market research activities out of their back-offices in India. McKinsey's India Knowledge Center (McKC) is a leading example³². Staffed with over 200 employees, McKC supports all research activities for all McKinsey offices worldwide. McKinsey originally was following a decentralized research set-up, with over 800 Research and Information (R&I) professionals located across 80 countries providing necessary MR support to consultants in the regional offices. However, limited scale with respect to volume and specialization, in addition to high-costs was forcing McKinsey to contemplate a center in India for all regional R&I activities. A pilot center was incorporated in 1999 with 10 MBA's, to service the MR requirements of the London and Sydney offices. Today McKC services all McKinsey office worldwide through three

teams employing graduates, MBA's and graphic designers. The Knowledge on Call team employs graduates that support global teams' business development efforts through basic research on the internet and on subscribed databases. The Research and Analysis team is a team of service specific dedicated specialists, segregated into verticals and functions such as Telecom, Energy and Natural Gas, Finance, Marketing, Operations, Business Technology etc. The team provides significant customized information and analysis support. In addition, there is a separate Visual Aids setup that provides support for preparing presentations and papers and employs communication specialists, graphic designers and copywriters.

AT Kearney also has a Global Research Center (GRC) in India with over 45 employees that undertake activities such as research, database search, report preparation, editing and formatting for client reports and presentations and other knowledge management activities. Global executive search major, Heidrick & Struggles (H&S) also has a 60-man team in New Delhi that services the H&S offices of Americas, Europe and Asia. H&S provides voice-based services that include database updating for candidate details including contact details, professional details. In addition, it has a research team that provides data services for specific engagements being undertaken by global offices. The services offered by the research

³² Internal Research

team also include creation of market, industry and organization SWOT analyses, case studies, research papers, news flash services etc.

The well known management consulting firm Bain and Co, is the latest to join companies like the Monitor Group and Everest Group, who have either already set up or are in the process of establishing their consultancy and research operations in India. Although Bain does not have consulting operations in India, it has opened a 22-person team research office in Gurgaon. AC Nielsen also plans to set up a captive unit in the country, which will be a division of AC Nielsen India. The Indian outfit is anticipated to provide customized research to AC Nielsen's Asia Pacific region and the Middle East, and later extended to Europe. The center will initially experiment with low-volumes and relatively simpler activities such as data processing, analysis, charting and report writing, which may subsequently be enhanced to other more knowledge-intensive processes.

For other organizations that do not have research as a core business, establishing a captive center may be an expensive proposition. In this case, outsourcing to third-party service providers in India emerges as an attractive alternate. In addition to providing economies of scale, these players are also able to offer expertise in various vertical and functional segments.

A large number of service-providers have begun to offer MR services. These include research-focused intensive BPO players such as Evalueserve, Irevna, Office Tiger, Pipal Research etc. whose primary service offering is in the area of research. Other traditional BPO players such as WNS are also undertaking significant efforts in migrating to knowledge intensive activities such as MR by offering a range of services including questionnaire design, survey programming and CATI/Web surveys.

WNS' Market Research team includes more than 170 analysts with Master's degrees in statistics, mathematics and computer science most of whom have worked previously with leading market research agencies in India. It has recently been awarded a 3 year research contract by the world's largest media conglomerate, the WPP group, for 4 of its MR entities. The work outsourced involves questionnaire design, survey programming, the actual survey, data cleansing, data processing and analysis, to preparing the final presentation

In fact, WPP views India as a critical destination for its knowledge activities, and sees a much higher degree of integration between its global offices, and offices in India. As a part of this strategy, WPP group advertising powerhouse Ogilvy and Mather has already begun outsourcing its creative and non-creative work to its Indian affiliate. The advertising industry has always required a deep understanding and local knowledge of culture, mindsets and ethos - and therefore a need to be grounded in a country or even a state. KPO has not been a structured and formal initiative within (most)

advertising agencies, especially not from the perspective of cost reduction. However, this is changing as clients are becoming more and more demanding and agency margins are increasingly under pressure. Bringing resources across markets helps the agency showcase quality, width and versatility - helping win and retain clients, as well as protect agency margins.

As more and more brands straddle global markets and ethos - the network of agencies is coming together, with creative, servicing and planning teams collaborating across geographies. For many of these brands, the geography itself has little significance and all they demand is the very best. Global agencies are leveraging people across markets for a global pitch - not so much to offshore creative development, but again to showcase knowledge and competencies across markets. In product categories where India is emerging as a key market (automobiles and telecom are good examples) Indian advertising executives are increasingly called to provide insights and inputs on initiatives outside India.

Some agencies, albeit at a limited scale, do recognize that some jobs require little

culture specific inputs and are easily offshored. An example - research inputs collated across countries being sent to India for analysis. There are also the entrepreneurial efforts, where small creative hot-shops pitch for work in markets such as the Middle East, but carry out most or all of their creative development work out of India

This new phase of offshore MR activities, as with other knowledge services, requires in-depth domain expertise and research and analytical skills. It requires more than the lifting and shifting of processes to a lower-cost location - the extent of value-addition requirements from the offshore team is significant. In certain cases, such as that of Ogilvy and Mather, the offshoring of MR may not even be structured in the form of a process, as the objective may simply be to gain the insight from the right people – irrespective of geography. There may be numerous more cases of how local teams have often supported global research initiatives, provided insights on local markets to global teams etc. the KPO MR market size may therefore be much larger, much more knowledge-intensive than is estimated to be in light of the many instances of 'hidden' knowledge diffusion.

10. DATA ANALYTICS

Every organization, irrespective of size, industry and level of maturity requires managing data. And with the amount of information in the world doubling every 20 months, effective and fast usage of data is now a critical success factor. Data analytics enables organizations to make effective use of data that it has access to, to reveal hidden trends and capture key insights to further be incorporated into and strategic plans and operational policies.

Data analytics is a prime example of how a knowledge process is amenable to offshoring. Review and analysis of large volumes of data is time and labor intensive. However in light of the tight linkage of data analytics with future strategies and operations, this knowledge service is often perceived to be a source of competitive advantage – and therefore preferred to be retained in-house. Nonetheless, by pre-defining specific parameters for analysis, the level of risk in offshoring data analysis is minimized tremendously. The only core task left for organizations therefore is to formulate appropriate policies around the insights revealed. The advantages of overall time savings and cost minimization accruing through offshoring are compelling – paving the way for a high-growth future for data analytics.

The banking and financial services sector is one of the major users of analytics. One of the areas in which they have made substantial gains is credit scoring. Statistical

credit scorecards serve as a better alternative to the traditional judgmental methods of appraising risk for sanctioning loans or credit cards. Equations can be generated to distinguish between high and low risk customers, and use them as automated screeners for new applicants, resulting in faster and more objective processing.

Analytics is extensively used across verticals such as:

- Customer analytics – used by banks, telecom and insurance firms
- Supply chain analytics – used by manufacturing and logistic firms
- Retail analytics – for influencing purchase behavior of shoppers
- Pharmaceutical analytics - deal with the drug discovery process, such as claims analysis or clinical trials
- Realty analytics – for supporting real estate transactions and investments

Customer analytics are used heavily by credit card companies at every stage of the customer life cycle – including detecting patterns of fraudulent credit card usage, cross selling of products and more efficient marketing models.

Insurance and healthcare are other areas where analytical techniques are used – for claims analysis, identifying potential customers, analyzing behavior patterns of risky or fraudulent customers and even for predicting the effectiveness of medications.

Manufacturing and logistic firms are the major users of supply chain analytics for optimizing stock points and stocking levels starting from raw material in a warehouse to finished goods at a retail store. The retail sector also uses data analytics extensively to understand the in-store purchase behavior of shoppers and to influence them through store layouts and product promotions.

To leverage the tremendous availability of skilled manpower in India, companies such as American Express, Citibank, Prudential Insurance, Accenture and Honeywell outsource a part of their analytics work to their captive centers in India. GECIS (now a third party service-provider) was one of the first multinational entrants in the analytics domain in India. It started operations in 1997, at a time when the US capital businesses were under pressure to handle the explosion in applications due to the refinance boom. The processing center was initially given simple processes, such as requests for address changes. The efficiency of the operations and the cost savings – 50% reduction in cost, and 90% reduction in errors created the base for GECIS to move

up the value chain³³. GECIS now undertakes complex analytics processes such as credit scoring, credit-card approvals and the treasury functions of GE's European and Asian operations. The analytics Center of Excellence of GE today has a team of 700 statisticians, MBAs, and PhDs.

In addition to corporates, there are also global analytic service providers like Fair Isaac who offshores analytic services to India. Fair Isaac has customers in the BFSI, retailing, telecommunications and healthcare verticals. It has established operations in Bangalore, to access talent in India for servicing the growing Asia Pacific market.

Independent analytic service providers:

- IGate (loans and mortgage)
- Symphony (manufacturing, retail, telecom)
- Modalytics (banking and investments)
- marketRx (medical and market analytics)
- Scandant (logistics)
- Orion Pro (banking, treasury and credit cards)
- EvalueServe
- Nirvana Solutions

There are a number of established third-party service providers in India such as OfficeTiger, EvalueServe, WNS, EXL etc. which offer high-end analytics services. Another example is that of Symphony, a US based company with core competencies in high-end analytics and commercial grade software product development. Symphony has over 1,000 employees in India in its

³³ CFO Asia

global delivery centers of Bangalore, Mumbai and Pune. The organization offers data analytics as one of its knowledge services, focusing primarily on the verticals of telecommunications, manufacturing and retailing.

The requirement for domain knowledge rather than scale has also resulted in smaller, niche players entering the analytics market.

marketRx, based in Gurgaon, specializes in providing sales and marketing analytic services to the pharmaceutical industry. The US based company services the European and Asia Pacific markets through its 100 person team in India. marketRx has developed advanced analytical software tools for designing pharmaceutical sales forces. It analyses medical prescriptions to create well-defined sales plans for medical representatives by detailing which doctors to call on, which products to sell, the cyclicity of monthly sales calls etc. The outsourced activities require knowledge of competition, regulations, market conditions, the output of which has a direct and measurable impact on the profitability of client pharmaceutical companies

Sensing the opportunity, software majors are also entering the fray, for example iFlex solutions has already set-up its analytics

business through its Reveleus Solutions. This is primarily due to the availability of internal capabilities for the development of complex and specialized software tools and algorithms for providing customized analytics solutions. In addition to software tools, data analytics also requires application of skill, judgment and knowledge. It is for this reason that the profile of a typical analyst requires experience in statistics or quantitative techniques, computing and business trends. For instance, marketRx hires graduates or post-graduates with degrees in Computer Applications, Business Administration, and in quantitative fields such as Statistics, Mathematics, Operations Research and Econometrics from premier institutes.

The availability of skilled manpower is a critical success factor for India to become a significant player in the world of offshore analytics. The area offers an opportunity for India to move out of labor arbitrage and migrate to the higher end of the value chain of knowledge activities.

11. TAXATION SUPPORT

The trend of outsourcing preparation of income tax returns overseas, particularly to India, is believed to have commenced in the late 90's. A relatively nascent segment, tax return offshoring has witnessed significant activity over the past few years with an increase in the number of accountants and organizations outsourcing tax preparation with a view to minimizing operating costs and maximizing efficiency.

Though a large proportion of the work is related to data entry on tax forms, specific aspects of the offshore taxation process are more knowledge intensive. These may involve auditing and substantive analysis such as examination of balance sheets, interpretation of items on the profit and loss statements, and computation of taxability, requiring knowledge of the local tax laws, amendments and pending legislations. The complexity of the activities may be gauged from the fact that offshore employees require specialized education and continual and intensive training. For instance, a large service-provider in India renders in-house training to its employees, imparted by a team of domain experts, who continuously study tax amendments and disseminate the same to preparers and reviewers. Training is also imparted for use of specialized software used for service delivery. The organization states that the total hours spent on training may vary from 320 to 640 hours, depending on the role of the person.

Foreign Certified Public Accounting (CPA) firms drive the demand for these services. It

was the larger CPA firms that pioneered outsourcing tax preparation but small and medium sized firms have also begun to follow the trend. The CPA firms prefer to partner with outsourcing facilitators, such as Commerce Clearing House (CCH), Outsource Partners International (OPI), SurePrep and Xpitax, for offshoring of tax-return support. The role of the facilitator is to provide infrastructure in the form of an Internet interface and more importantly to undertake offshore vendor selection, coordination and subsequent relationship management on behalf of the CPA firms. CPA firms are to merely scan client documents and upload them to the secure website of the facilitator. From here, the offshore vendor downloads the documents and feeds in the relevant data into specialized software used for tax accounting. The tax return is prepared and uploaded back onto the facilitator's website, from where the CPA firms download the completed returns to finally deliver them to clients.

As mentioned, most facilitators partner with Indian vendors for delivery of taxation support service to CPA firms. For instance, CCH had been partnering with the Mumbai based Datamatics, but with increased volumes, it decided to enlist the Mphasis Group as its second partner. Other service providers in India include smaller organizations such as Business Accounting Services, Cosmic Internet Technologies, G.K. Management Services and Ekam Infotech.

However, other facilitators such as SurePrep, a tax-outsourcing firm based in southern California prefers the captive approach, and employ more than 200 accountants in Mumbai and Ahmedabad. Xpita also employs full time staff in India.

A unique source of both demand and supply for offshore tax activities is through the big four accounting firms whose local centers in low cost destination provide back-end support to global offices. The India office of Ernst & Young LLP provides tax return preparation support to global offices, as does PricewaterhouseCoopers.

The primary reason behind the increase in tax preparation offshoring is the cost savings, which can range from 50-60%, due to lower labor as well as infrastructure costs. In addition, offshoring enables countries such as the US to overcome the shortage of tax professionals, which has significant implications on costs, efficiency and workload balance especially during the peak

tax seasons of January to April. Increasing demands due to Sarbanes-Oxley and other regulatory pressures have further exacerbated the tax professional demand-supply mismatch. India offers a large supply of qualified professionals – one hundred thousand Chartered Accountants (CA) and two hundred thousand apprentices, the largest number of CA's in the world. Time-zone differences facilitate 24-hour operations and faster processing, with information being able to be transferred across the globe in seconds. Outsourcing tax-compliance work overseas can enable CPAs to focus on higher-margin services such as tax consulting.

Third-party service providers include:

- *Mphasis*
 - The company provides complete back office services for CPA firms in US tax return preparation
- *Datamatics*
 - The company provides tax preparation services for US and Canadian clients out of its Mumbai office
- *Business Accounting Services*
 - The Bangalore based company specializes in bookkeeping and tax work for the U.S. and European market and employs 200 trained accountants
- *Cosmic Internet Technologies Solutions*
 - The company provides tax processing services and employs 100 people in Bangalore
- *G.K. Management Services*
 - Headquartered in Tamil Nadu, the company began offering tax preparation outsourcing two year back, and is now working with seven U.S CPA firms
- *Ekam Infotech*
 - The Gurgaon based company provides accounting and taxation services to CPA and Accounting Firms in US & UK

In spite of the clear advantages, there are concerns regarding the outsourcing of sensitive information with implications on client confidentiality agreements. To address these risks, vendors in India are constantly undertaking measures and implementing processes to ensure the highest level of data security. For instance, Sureprep's Indian employees are required to sign nondisclosure/confidentiality agreements. In addition, data encryption during transfers, paperless environments, restricted access to data-processing centers, prohibition of downloading, printing, scanning or copying of client's financial information and firewall

security are other measures being taken to address these concerns.

In spite of the sensitivities involved with tax offshoring, the growth in the segment shows no signs of abating. With Indian service providers taking proactive steps to ensure the quality of tax preparation and to protect the confidentiality of information, offshoring of tax services to India is not only well positioned to witness growth with respect to volumes, but also eventual progress to higher-end, more knowledge-intensive services.

12. EQUITY RESEARCH

Wall Street investment banks and brokerages are offshoring their financial research to India, attracted not only to the quality and availability of talent in the country, but also due to increased pressure to reduce operating costs. Stock research margins and trading spreads abroad have been witnessing a decline over the years, steadily building the business case for offshoring of services to India. India is able to offer an optimal value proposition by providing the highest quality of service, in conjunction with the opportunity of more than 50% cost saving.

India has a large number of MBAs and CAs - there are 950 AICTE³⁴ recognized management schools producing approximately 70,000 graduates a year, the largest after the US. There is also a ready supply of experienced talent working in domestic financial firms, which multinationals can access for lateral recruitment. For instance, in Mumbai itself, there are over 60 brokerage firms that have their own research divisions. With many Indian companies adhering to US GAAP norms for the purpose of listing on American stock exchanges, Indian researchers have started acquiring domain knowledge in US GAAP.

The typical employee profile for financial research includes CAs, MBAs, mathematicians and statisticians. A large proportion of the research is on equity and fixed income markets. Financial modeling, valuation of companies, preparation of company profiles, transitioning financial information between accounting standards,

and tracking of stock prices are some of the areas in equity research. In addition to data collection, it requires analysis, structuring and synthesizing of a problem. Analytical skills, number crunching abilities, as well as knowledge of accounting standards, whether it is US GAAP or the International Accounting Standards (IAS), are necessary attributes for employees in this profession. These skills are readily available in India, at globally competitive charge-out rates. For instance, while a junior research analyst from an Ivy League school would cost approximately USD 150,000 per annum, fresh researchers joining large brokerage trading firms in India are typically paid between USD10, 000 to USD12, 000 a year³⁵.

In addition to the cost and quality advantage of Indian manpower, regulatory stipulations have also spurred the growth of equity research offshoring. These regulations were introduced during the settlement of a case in

³⁴ All India Council for Technical Education

³⁵ 'Equity Research Outsourcing: The Next Wave', India Brand Equity Foundation: '

the U.S involving allegations of undue influence of investment banking interests on securities research at brokerage firms. The case drew widespread attention when authorities uncovered e-mails in which analysts at the firms privately derided stocks they were recommending to the public. The \$1.44 billion settlement made in 2002³⁶ forces the ten firms involved to ensure that stock recommendations are free of bias by severing links between analysts and investment banking. The firms had to physically separate their research and investment banking departments to prevent the flow of information between the two groups. In addition it was mandated that the firms involved have to provide independent research to clients for five years, and from no fewer than three independent research firms.

The settlement and the subsequent regulation clearly benefit the suppliers to the offshore industry – third-party providers as well as captive units, the latter also less likely to face conflicts of interest. In light of the advantages that offshoring was now being able to provide, a large number of foreign investment banks including Goldman Sachs, JP Morgan and Lehman Brothers have set up captive operations in India for financial research. Goldman Sachs operations in Bangalore include asset management, equity and treasury operations, investment banking and corporate services. Morgan Stanley, which

had been operating a mutual fund in India, set up a research division for equity and fixed income research. J.P. Morgan too moved up the value chain from an initial call center in Mumbai to financial research. Lehman Brothers, which had exited from its call center operations in India, realized the immense advantages that India could offer for its knowledge activities. It has reentered the country by setting up its global research hub in Mumbai, which handles processes including mortgage origination and equity research.

Equity-Research captive operators

- Lehman Brothers
- JP Morgan
- Standard Chartered
- ABN Amro
- World Bank
- Goldman Sachs

GE Analytics, Evalueserve, WNS Global and OfficeTiger are some of the large third party providers of financial research services. OfficeTiger, established in the late '90's commenced operations by offering secretarial services to Wall Street firms. The company now specializes in sophisticated financial analysis, and has 1500 people in Chennai providing these services. The Gurgaon-based Evalueserve, which commenced operations as a business information services company, also undertakes research and analysis for banks and venture capitalists. The requirement for specialized domain knowledge allows smaller players to also offer services and remain competitive. For instance,

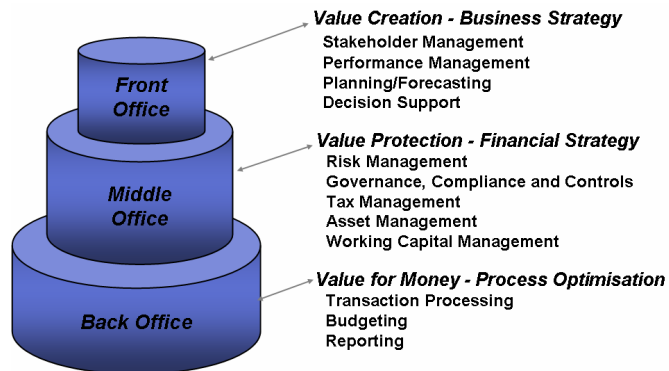
³⁶ Columbia Daily Tribune, December 2002

SmartAnalyst in Gurgaon has a 50-person team, which provides industry vertical reports, financial modeling and business information services to over 60 global clients.

Even if the pressure to provide independent research to their clients reduces, foreign firms are anticipated to continue to leverage India as a knowledge-service hub, for there are few other destinations that can provide the value proposition that it does.

13. FINANCE AND ACCOUNTING

The finance function worldwide is witnessing a revolutionary shift. From being perceived as a mere book-keeper, today's fast-paced business environment has placed the CFO and the Finance Function



under increased pressure to demonstrate the value it adds to business. The focus is therefore not only on “value for money” functions such as transaction processing, budgeting and reporting – but is moving up the “value creation” chain to functions such as planning and decision support. As the Board is responsible for overseeing the organization, it needs to find the right level of involvement and approach in defining the company's strategic direction, and fostering long-term shareholder value. In addition, the risks associated with globalization and evolving information technologies, are all propelling the Board to be more accountable, informed and pro-active. For many Boards, the Finance Function is a good starting point.

The concept of outsourcing and offshoring has allowed such a change in focus to originate and sustain itself. The traditional back-room functions have been hived off to “specialists” in low cost destinations, who are able to leverage volumes and generate cost saving opportunities. In addition, this approach produces significant advantages, which include, freeing up of skilled in-house resources for higher value finance function and improvement in internal customer satisfaction due to the establishment of SLA's. Further, in-house process flows have been observed to become more streamlined

to enhance efficiencies in the outsourced/offshored processes.

F&A Process Escalation

| Non-sensitive Simple | | Sensitive Complex |
|-------------------------|-----------------------|--------------------------------|
| Accounts Receivable | General Ledger | Budgetary and Decision Support |
| Account Payable | Maintenance Reporting | Consolidation |
| Payroll | Statutory Returns | Analysis |
| Tx Processing | | |
| A/Cs Research | | |
| Reconciliation | | |

Finance and Accounting (F&A) outsourcing is emerging as one of the fastest growing BPO segments. The most common F&A processes that are outsourced are transactional in nature such as accounts

payable, accounts receivable and payroll. However, with a change in customer requirements, offshore centers have begun to manage almost the entire business process – including areas such as budgeting, forecasting, treasury and risk management – traditionally perceived as “core functions” to the organization.

The migration to higher-end financial processes has been gradual, in light of concerns of data confidentiality and stringent quality requirements. Delivery of these processes requires both process and business acumen, with the ability to analyze and intuitively derive conclusions based on previous organization trends, industry dynamics and other variables. It is for this reason that while for transactional processes, employees are typically graduates, usually with a bachelor of commerce degree, there is a considerable shift in the skill-set required for processes that lie on the higher end of the spectrum. Some employees may be Chartered Accountants or MBA's with specialization in finance; others may have niche domain skills. For instance, in the treasury function of GECIS, some employees are currency traders.

It has been observed that it is a large number of captive centers that are typically involved in the higher-end financial processes, including ABN Amro, Prudential and JP Morgan. ABN Amro Central Enterprises Services (ACES) had started operations in Mumbai in 2002 to handle the

information technology and communication network of the company. The center later started to handle banking and accounts payable services, and now has accounts reconciliation and reporting in its portfolio of F&A activities.

GECIS handles the F&A processes for 26 financial and 6 industrial divisions of GE. The F&A Center of Excellence handles the full suite of financial processes – including accounting, treasury, closing and reporting, financial planning and analysis, and accounts payable and receivables management. The financial planning and analysis team comprises of 250 employees who crunch the requested data – inventory turns to usage of cash and working capital; or productivity, efficiency, and yield analyses; or operating margins at product level, within an hour after receiving an e-mail request from GE staff across the globe. The treasury function, employing 80 people, handles foreign exchange, hedging, cash management and bank-relationship management.

P&O Nedlloyd, which is involved in container shipping and international logistics, has centers in Pune and Chennai. The Finance division in Asia Pacific separated the finance & accounting jobs into three streams - invoice to cash, purchase to pay, and financial reporting. Recognizing that the tasks would require different skill levels, the company decided to offshore these tasks separately to Shared Service Centers (SSC) and Centers of Excellence (CoE). The CoE handled processes on the higher end of the spectrum, with more qualified and experienced staff.

In addition to captives, large IT service providers such as Wipro, Infosys (Progeon),

Mphasis, Satyam (Nipuna) are some of the prominent third-party service providers in the F&A space. For instance, Wipro

Spectramind provides comprehensive finance offerings across different cycles including the plan to result cycle having activities such as reconciliation, accounting and reporting. Its compliance reporting covers SOX Reporting, and US GAAP

Compliance, which require expertise in the respective fields.

Higher end F&A outsourcing is still relatively recent, and a large proportion is still transaction based. However, it is expected to grow, spurred by needs to increase productivity and utilize the best talent available in the world.

14. ANIMATION AND CONTENT DEVELOPMENT

A confluence of creativity, steadfastness and imagination has set the Indian animation outsourcing industry ablaze. Pentamedia Graphics, in Chennai has assisted in the creation of 3D Walt Disney animation films such as Sindbad and Alibaba. A full-fledged feature film for an Italian producer, Rainbow Productions, is in the final stages of production at the Toonz Animation Studio, Chennai. Cartoon Network is buying animation films made in India. Padmalaya Films, Hyderabad won a US\$14-million deal with Italy's Mondo TV, Europe's second leading cartoon producer and distributor. Barrie M Osborne, the legendary producer of Hollywood blockbuster 'The Lord of the Rings' is founding a 3D and special effects studio in India to cater to a global audience.

Animation in India was pioneered by the Indian advertising industry, used extensively to capture the viewer's imagination.

Television channels had also been the other major exponents of animation, using animation for promotions, automated real-time graphics etc. But reluctance on the part of producers to invest in an art form with no clearly defined audience saw animation being relegated to the occasional scenes in Indian action thrillers. But this mindset underwent a change with the success of Cartoon Network in India. The latter half of the 90's saw a proliferation of animation studios across the country, especially in the southern cities of Hyderabad, Chennai and Thiruvanthapuram. This was when the industry developed a focused export-oriented look, with existing players partnering with design studios in the West and taking up co-production and subcontracting activities.

These studios initially contributed towards supporting 2D animation for global studio houses, undertaking activities primarily in the post-production segment such as clean-up, in-betweening, scanning etc. These functions constituted the highly labor-intensive sections of the process of animation, and did not warrant high levels of domain skills and creativity. However, with changes in global trends and the development of requisite skills and infrastructure, India today is gradually moving up the value chain and emerging as a prime location for original content-development, especially in 3D animation. In keeping with rising industry demand, a number of companies across the country emerged and dedicated themselves to the outsourced world of animation and special effects. These include Toonz Animation, Crest Communications, Maya Entertainment, Silvertown Studio, UTV Toons, Zee Institute of Creative Arts, 2NZ Studios, Pentamedia

Graphics, Prasad Studios, Acropetal, JadooWorks, Color Chips and Heart Animation.

In spite of the immense potential of animation – for both domestic and global markets, the supplier side of the industry remains fairly oligopolistic, due to the high entry barriers in the form of investment requirements. Animation firms have to make heavy capital investments to set up large production studios equipped with state-of-the-art equipment.

For instance, Toonz Animation has established a complete state-of-the-art facility, staffed with internationally trained creative professionals from around the world. Its primary studio, Studio A, is located at Technopark in Trivandrum where over 400 artists and technicians undertaking both 2D and 3D production work for ad films, commercials, television series, feature length films and live action films. Set up with an investment of \$7 million in 1999³⁷, Toonz Animation has emerged as one of the leading players in the nascent Indian animation market. Besides focusing on developing its own cartoon animation, skits, serials and full-length feature films for the export market, Toonz also has a co-production deal with Britain-based Tree House Production for an animation series.

Toonz, in addition to other well-established players such as JadooWorks, Padmalaya,

Pentamedia, Color Chips etc. is undertaking effort to take up higher value projects and concentrating equally on original content production to emerge as a serious contender on the global scene. In this business model, also called 'In-house Production', Indian animation studios create their own content in-house thereby owning the complete intellectual property rights to the content. Returns from this model, are high. Studio houses not only generate revenues from content, but also through royalty payments from merchandising. However entry barriers in the form of large-scale investments, are also high, preventing small studio houses from adopting it and also requiring larger studio houses to de-risk their model by offering outsourced or collaborative animation services.

Offshore Business Models for Animation Studios:

- *In-house Production*
 - Studios create own content, sell to global firms
 - IP rights belongs to Indian firm
 - Indian firms earn revenues from sale of content, royalties
- *Outsourced Animation*
 - Indian firms undertake lower-value ad activities
 - IP belongs to foreign firm
 - Pricing is base on a per hours/per project basis
- *Collaborative Animation*
 - Multiple animation studios develop content
 - IP rights are shared

Outsourced animation is the most commonly adopted business model in the Indian

³⁷ Indian Television, September 2005

industry today. A low risk-low return business model, studios undertake low value-added services such as post-production services, and work on a time and material basis or a fixed payment basis. In this business model, the intellectual property of the job rests with the client, which may chose to execute the pre-production part of projects in-house. The partnership could be between animation studios in India and abroad, Indian animation studios and foreign TV channels/film producers, Indian animation studios and advertising firms etc.

In the collaborative production business model, there is joint effort involving multiple animation studios, which come together to leverage each other's expertise. The intellectual property rights are shared by the firms as are the revenues arising out of the content and from royalty from the sale of animation character related products. The partnership could be between animation studios in India and abroad or between Indian animation studios and foreign TV channels/film producers etc.

As mentioned, the business model/s adopted by the studio houses varies with the risk appetite and return expectation of the organization. While smaller studios typically offer outsourcing services, the scale of larger studios allow them to also develop in-house content for sale to global organizations in the verticals of feature film production, TV programmes, advertising/commercials, games, online education,

CAD/CAE, and industry specific applications (architecture, medical, legal/ insurance, etc).

As with the sources of demand, there are multiple geographic sources of supply for animation processes. For instance, Korea, China, Philippines etc. are some of the well-established destinations servicing the industry's outsourcing requirements. However India, yet again, has emerged as a serious contender in light of the span of benefits offered – the most crucial being cost savings. In fact, research indicates that other Asian countries, too, are passing on their work to India, given the scale of savings involved. According to estimates, the cost of outsourcing one hour of animation work to India is estimated to be close to \$60,000, versus the \$160,000 to \$200,000 that other leading animation centers in Korea, Taiwan and the Philippines charge. In the US, it would cost anywhere between \$250,000 and \$300,000 to produce one hour of animation.

India's Success Factors in Offshore Animation:

- Low-cost manpower
 - Cost per hour of animation work
 - India: USD 60,000
 - Korea: USD 160,000 – 200,000
 - US: 250,000 – 300,000
- Domestic film industry – Bollywood
 - 800 films per annum
 - 2.5 mn employees
- Availability of software skills

The total cost for making a full-length animated film in America is estimated to be

\$100 million to \$175 million. In India, it can be made for \$15 million to \$25 million³⁸.

A key factor creating the potential for cost saving is the availability of skilled manpower. The mid-90s witnessed a plethora of training institutes, like the Film and Television Institute in Pune, Zee Institute of Creative Arts and Heart Animation Academy in Hyderabad and many others, being set up in all major cities in the country. Today these institutes are helping build the manpower base for animation studios. In addition, the surge in animation outsourcing is also being attributed as a spillover effect to India's prestigious image as a software destination – due to the 'ready-made' availability of similar skills.

India's domestic film industry, commonly referred to as Bollywood, has also contributed to the availability of 'latent' talent. The Indian movie industry generates over 800 films every year with over 2.5 million people involved in this cauldron of creativity³⁹. This has resulted in cities such as Mumbai, Hyderabad and Bangalore, the hubs of the film industry, becoming the center of animation outsourcing, as they offer a well balanced mix of software skills, production and animation expertise and studio infrastructure.

However, the very source of competitive advantage is now also being viewed as a

³⁸ 'Asian Animation Industry: Strategies, Trends and Opportunities', July 2004

³⁹ 'Indian Media and Entertainment Industry'

challenge for the future growth of the animation industry. From initial concerns on level of creativity of Indian manpower, the focus has now shifted to the adequacy of manpower available to sustain long-term growth. Although some enterprising companies like UTV, Zee TV, Maya Entertainment, Escotoons, TV Toons and Arena Multimedia have begun training courses for animation, there is still perceived to be a demand-supply gap. In fact, some studios have experimented with employing foreign manpower to bridge availability gaps. A leading studio in India has employed 90 foreigners, a majority coming from the Philippines. Although salaries are significantly higher (USD 500 a month for Indian animators versus USD 1,500 for foreign counterparts), the organization maintains that in the long-term, such an approach may still emerge as feasible. Another leading studio has tapped rural markets such as Mahabalipuram, Tanjore etc. for grid sculptors, painters and other art form artists. The workers are provided training for six months subsequent to which they are transformed from traditional to digital platforms.

India's Challenges in Offshore Animation:

- Shortage of manpower quantum
- Perception of competency in "2D" animation vis-à-vis "3D" animation

An additional challenge is that of a global perception of India's suitability only for 2D animation outsourcing, which had been its traditional area of focus. However, with the

future of animation being perceived to be in the 3D domain, the focus for the Indian industry as a whole will need to witness a strategic shift. Some of the larger players, such as Crest, have undertaken concerted efforts in this direction, and are experiencing considerable success. For instance, started in 1990 with the production of advertising commercials, by 2000, Crest made a choice to exit the 'post-production' space, and leverage the animation growth wave. Till two years ago, only 10% of the company's staff was engaged in the animation business – a percentage that has grown to 75% today.

Crest Communications also recently established a wholly owned subsidiary in Los Angeles (LA) called RichCrest Animation. Pentamedia too, has acquired a US-based film production and distribution company, Improvisation for \$19.5 million, and a Singapore-based 2D animation company, Animasia International for SG \$0.5 million⁴⁰. This is an emerging 'necessity' in the industry, with a number of players establishing base in their key customer's markets. The objective of this strategy is to enable organizations to get a foothold in key markets, and bridge any perceived cultural and geographic gaps during times of business development, service-delivery and after-sales. In addition, local presence ensures that the "cultural" feel of the output is in line with the sensitivities of the local masses viewing the content.

In this context, knowledge has begun to flow from countries of demand, to countries of supply. Animation outsourcing, like any other function requiring skill and creativity, seeks the requisite talent; in whichever destination it can find it. The key objective is to create an optimized team, defined by the competencies each individual offers, rather than being based on geographic proximity. India has tremendous potential to offer to global clients, who have already scratched the surface of the country's animation talent. The rapid industry growth rates have pushed India in the right direction of its envisioned destination - a global hub for the high-end knowledge services of design and conceptualization.

⁴⁰ 'Asian Animation Industry: Strategies, Trends and Opportunities', July 2004

About PricewaterhouseCoopers

PricewaterhouseCoopers Pvt. Ltd. (PwC) is one of the largest and most reputed professional services networks in India, providing industry-focused services to public and private clients. PwC specialists from the advisory and tax teams connect their thinking, experience and solutions to build public trust and enhance value for clients and their stakeholders.

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