The Maturation of Offshore Sourcing of Information Technology Work

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Introduction

> ***GE** may be the largest American customer of offshore IT work. Its offshore units are comprised of approximately 3,500 software professionals responsible for a wide variety of functions at the corporation. Outsourcing to India was planned to increase to $400 million in 2001 compared with $280 million the previous year. In addition to India, GE also has a large offshore center in Guadalajara, Mexico.*
>
> *"**Intel** Corp. opened [a software lab in 2000] in the central Russian city of Nizhny Novgorod. The chip maker employs 100 local programmers at the lab, plus anther 100 contractors elsewhere in the country.[i]"*
>
> *"**Ford** [will] shift much of its computer-aided design and manufacturing (CAD/CAM) development, e-mail processing and application development tasks to a subsidiary it's setting up in Chennai, India. Although Ford already has limited IT operations in that country, the latest effort is expected to help the automaker cut its costs by an additional $30 million to $60 million per year because IT labor costs in India are a fraction of those in the U.S.[ii]"*

As the experiences of Intel, Ford, and GE indicate, offshore sourcing of information technology (IT) work is increasingly occupying managers' attention. Pressured by rising domestic wages, fast moving technologies coupled with associated skill gaps in internal IT staff, and a pressing need to both contain costs and constantly innovate with IT, managers may choose one of two strategies for acquiring needed IT competencies. They may contract with or outsource to a domestic supplier, or they may go offshore in search of IT talent. This latter strategy: the sourcing of IT work by US-based firms from nations outside the 50 United States, has been the focus our recent research. We use the term offshore sourcing to include both offshore outsourcing to a third party as well offshore insourcing within the global corporation.

Why has foreign sourcing of IT work been growing? Clearly, improvements in the separability of software production have reduced transactions costs – the cost of coordinating the software development and support work. By coordination we mean negotiating, synchronizing, communicating, traveling, monitoring, providing feedback, and enforcing a contract. These improvements in software production have matured hand-in-hand with the capabilities of the client firms in the US and with the capabilities of the (internal and external) organizations offshore. Additional important factors in the drive offshore include the production cost advantages of global sourcing, and supply side considerations such as the ready availability of skills to execute projects speedily.

Our goal in this article is to provide managerial insights into the phenomenon of offshore sourcing of IT work. In order to gain an understanding of this phenomenon and its decision-making dynamics, we focused on the largest and most influential US-based firms and interviewed executives responsible for the global IT sourcing decision (see Appendix for study methodology). We spoke with non-technology companies in manufacturing and service sectors that need to support their internal Information Systems activities. And we spoke with technology companies, in which software or software professional services are a primary function. We asked managers what was driving the offshore phenomenon, where they were going and why, what internal organizational impediments they faced, and how these impediments were being overcome.

The experiences of these companies suggest that offshore sourcing of IT work follows a stage model characterized by increasing maturity and sophistication in the offshore effort. We present this model to help senior IT executives benchmark their own activities. We also describe an important trend that suggests continued growth in offshore sourcing of IT work: the maturation of the global labor supply. Finally, we conclude with recommendations for managers seeking to leverage offshore resources in the delivery of IT solutions.

Stages of Offshore Sourcing

The companies we studied follow different paths as they proceeded offshore: Some are far along in their efforts while others are struggling to begin. Some choose to follow the path of vertical integration, while others find value in strategic alliances and partnerships. Is there a discernible pattern here? We believe there is. We introduce here what we have labeled, the SITO stage model – short for "Sourcing of IT Work Offshore" – derived from our own research as well as from the (non-IT) sourcing model of Monckza and Trent.[iii] Each stage is characterized by a unique set of strategic imperatives and internal firm dynamics. We also observed that within each stage, firms share a common profile in the way they manage their offshore sourcing activities. These archetypes map into the stage model as exemplars of varying degrees of maturity.

Stage 1: Offshore Bystander

In this stage there is no offshore sourcing of IT work. While nearly 100% of Fortune US 500 firms were at this stage in 1990, in 2002 only 30-50% of these firms are still in this stage. Firms remain in this phase for a variety of reasons: there may be an ample supply of domestic IT labor, or simply because the offshore option is not in managers' mental models, although this last condition is becoming less prevalent.

Why do these firms remain bystanders in the offshore movement even with the significant media attention focused on offshore sourcing? Part of the explanation lies in the cultural climate prevalent within these companies. We learned from corporate managers that there is a significant degree of pushback from inside the firm to offshore

outsourcing. Internal managers, some of who may be project managers, or product managers, are often initially reluctant to send work offshore. "Nobody wants to move their work," said one offshore executive of the managers he deals with. We found two reasons for pushback: domestic mindset, and inexperience in managing over distance. The first reason, domestic mindset, has to do with the corporate (or divisional) culture. One corporation was characterized by an inside source as "having a US-centric model" while another was used to doing all of its work only at its various sites in California; a third corporation had a conservative culture not used to diversity and foreign accents, at a fourth corporation, which engages in sensitive projects, managers were concerned about "atomic bombs in India."

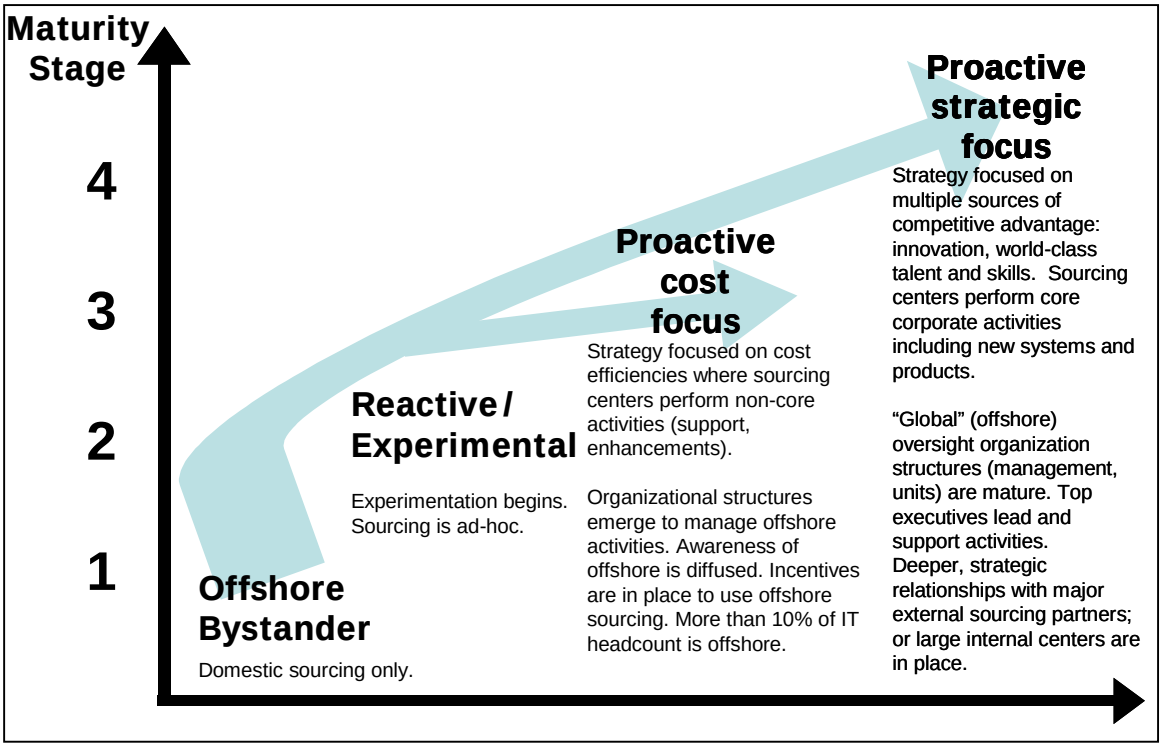

Figure 1: Sourcing of IT Work Offshore (SITO) Stage Model.

The second pushback factor, again, an aspect of organizational culture, is inexperience in managing geographically dispersed projects. Managers are more comfortable with the intuitive approach of "managing by walking around." As one executive from an IT Professional Services firm pointed out, when IT managers are given responsibility for a large project, they tend to not look beyond their own staff line for labor. Separately, some managers believed that all the system requirements must be specified, in writing, very precisely, up front, in order for offshore sourcing to be successful. Precise specification is difficult to do—so it becomes a justification for avoiding the offshore route. Or, as a result, some managers are only comfortable sourcing low-level tasks offshore. We also found that in the case of product engineers, this group felt a strong sense of ownership to the products that they created and were not readily willing to

delegate responsibility because they could not believe that anybody else could come up to speed and know enough to do the job well.

Undoubtedly, globally dispersed projects are objectively more difficult to manage than those that are co-located. Those executives interviewed for our study, who were already active offshore users, collectively generated a litany of problems that emerged early on, many of which persisted: time zone differences, high employee turnover in India, arranging visas to the United States, cultural differences, persuading Americans to travel abroad, team integration, communicating across cultures, poor English language skills, limited interaction between the Americans and the foreign professionals, strange work hour regulations abroad, lack of domain knowledge, and poor telecommunications infrastructure abroad.

In our study we identified three firms that were in this stage. Each of these large firms had not shifted IT work offshore for a very different reason. The first firm was involved in a broad long-term outsourcing contract with a major US domestic outsourcing company. This tied their hands in exploring other avenues. The second company was fortunate enough to be situated in an American metropolitan area in which the supply of IT labor was sufficient for their needs. The third company had not moved work offshore because much of its own work was defense oriented, and it had been implicitly assumed that this would compromise security. However, all three companies were taking small, initial steps offshore. And as is common, all three had their eyes primarily on India. One corporation, for the first time, had four projects being bid on by Indian firms. The second corporation had conducted some studies, but had not taken action yet. The third corporation had just begun a very small engagement with an Indian company – with just three Indian professionals working on an experimental project. This latter firm could be classified as transitioning into Stage 2.

In nearly all of these large US firms that we talked to, no matter what stage of our model the firm was in, we found an internal corporate "offshore champion" that plays the important role of advocating a new approach within the corporation. Champions see their mission as expanding offshore sourcing, and are frustrated, or stymied, when they do not succeed in this mission. At one corporation, stuck in Stage 1, a stymied champion said to us: "we missed the boat on India". The champion is the catalyst who creates momentum within a complex political environment such as a large US corporation.

The archetypical firm in the stage of an Offshore Bystander is one with a history of choosing domestic partners for any outsourcing activity, and not just information systems. It is also likely to be a firm with a reasonably conservative culture (i.e., a domestic mindset) where moving offshore represents a significant shift in corporate values. Finally, such a firm will have one or two visionary managers (the offshore champions) who clearly see the value of moving work offshore. However, their views are not widely shared among the rest of the corporate executives and IS managers.

Stage 2: Reactive/ Experimental

Firms transition from Stage 1 to Stage 2 when the voice of the offshore champions begins to be heard. In this stage the approach to sourcing is *ad hoc*: vendor, site selection, and acquisitions, are not carefully coordinated and managed. Pockets of offshore IT activity emerge within the company, but there is little coordination or even knowledge of what another division is doing.

We label this stage experimental because typically firms have moved into and through Stage 2 beginning with pilot projects (which were viewed as experimental), Y2K projects, or both. For many firms the experimentation phase began in the early to mid 1990s timeframe, lasted several years, as they moved onto Stage 3.

We also label this stage as reactive. It is reactive because offshore sourcing was motivated for many years by a combination of US IT labor market tightness and cost pressures. Managers saw little choice but to go offshore to meet their IT needs. Since 2000, however, the reactive component has subsided, and the motivation for moving into Stage 2 has shifted to a combination of cost, diversification, or bandwagon effects (everyone-is-doing-it).

Cost has clearly been the dominant component of the business case for offshore sourcing of IT work. More than 90% of our study's firms that were sourcing offshore were doing so, at least in part, for cost savings. Specifically, for 70% of these firms' cost was the sole reason or a key reason for offshore work. Some quotes from different interviews illustrate this point.

> "Our IT budget is under constant pressure. It has shrunk [by a factor of 2], therefore the move to India makes perfect sense"

> "We [in the offshore units] are now doing SAP [….]. We used to think that only $125/hr [American] consultants could do that. We knocked that off."

The cost savings as reported to us were substantial. Consistent with similar studies, companies in our sample were estimating loaded costs for an Indian IT professional at roughly 30-50% of U.S. costs[iv]. A number of executives explained portions of their cost computations – the cost ratios –across a variety of offshore sites ranging from 0% discounts relative to the US, all the way to a 50% reduction in US costs.[1]

We view Stage 2 as a transitional stage in that it is unstable. When offshore sourcing of IT work begins, it creates a momentum of its own and propels the firm to develop

[1] Some companies have developed fairly sophisticated labor costing models, which they use to compare the cost of an individual IT professional in California with one in Kansas City with one in Bangalore with one in Stockholm. Perhaps the most interesting of these ratios is for Canada. Canada is not a nation that first comes to mind for offshore IT work. Due, in part, to currency differentials, Canada now has a cost advantage of about 30% relative to the US for its IT professionals, on par with nations such as Brazil and Ireland.

structures, roles, and processes that will allow it to better leverage the offshore resource. Firms at Stage 2 are characterized by ad-hocism in their offshore efforts. Offshore ad-hocism means picking offshore vendors in a random fashion, or letting the location of offshore suppliers be dictated by short term convenience, or setting up an internal offshore unit without high level mandate. All of these will almost surely negate any corporate-wide cost or other advantages that the offshore exercise is seeking to gain. A purposive strategy, such as that found in Stage 3 or Stage 4 firms, will achieve two key objectives: one, it will ensure that vendor and site selection is optimized to provide the value that management seeks, and two, articulating and communicating the offshore strategy will assist in gaining buy-in from managers throughout the company.

Stage 3: Proactive Cost Focus

The transition from Stage 2 to Stage 3 is the most profound, moving from reactive to proactive. A key shift that occurs here is in the managerial mindset related to offshore sourcing and a broad-based acceptance of this approach as a viable strategy. Here, the cost advantages of sourcing IT work offshore become widely acknowledged within the company. Managers begin to develop internal capabilities and expertise related to offshore relationships. If managers are dealing with external vendors, they are learning to manage these long-term relationships, and their knowledge about supplier and site performance expands. Given the focus on cost, some firms find themselves with a relatively large number of suppliers. For many Stage 3 firms, offshore tasks are largely for non-core and structured activities such as quality assurance, testing, porting applications, Y2K remediation (in the past), or maintenance/ sustaining work.

This stage is where executives begin viewing offshore sourcing as an important mechanism for wielding external competitive (market) pressures on internal IT units. Internal IT units have often been characterized as a "monopoly" that restrict free choice among captive internal clients[v]. Sending IT work overseas to inexpensive destinations creates a natural incentive for the domestic internal IT unit to utilize resources as effectively and efficiently as possible. For instance, at a number of corporations in our study, the offshore units bid competitively for internal projects against domestic internal units. Offshore units will also offer increased cost flexibility. For example, one such unit in our study offers a menu of monthly contracts, short-term contracts priced at an hourly rate, or through bids on complete jobs. Quotes from our interviews illustrate both the cost efficiencies afforded by offshore sourcing, and deliberate management interventions aimed at promoting offshore sourcing throughout the company that are indicative of the shift in managerial mindset.

> Corporation A targeted 10% of its work to go offshore within the next few years. Managers had specific numeric quotas to send work offshore. Each manager received an annual "balanced scorecard" which specified an offshore staff level. This proved to be a powerful incentive: it appeared that managers were meeting these offshore quotas about 80% of the time. In addition, strong cost-based

> budget controls were driving cost-based decisions towards inexpensive offshore sites.
>
> At Corporation B "… for every new application there is a [standard] checklist of how many global resources you are using, and if not, why not?"

Yet cost efficiencies are not the only advantages the corporation encounters in Stage 3. For at least three companies within our sample, the discipline of development and the rigor of the methodology employed by the offshore unit (in India) were important benefits. For American companies, the best-known quality yardstick is the CMM model, and a number of Indian firms have attained world-class levels of quality by implementing CMM processes.

In Stage 3 companies also begin to purposefully shift low-value, monotonous, and boring work offshore in order to focus on more interesting, higher value-added tasks within their internal IT units. IT managers appreciate this benefit because it has become increasingly difficult to hire and retain domestic software professionals to perform these tasks, especially in high wage metropolitan areas.

Today, we estimate that 50-100 of the US Fortune 500 firms are in Stage 3. We label these archetypes as "Classic Offshore Outsourcers." This corporate archetype is characterized by intensive use of third party offshore (primarily Indian) work performed for internal support functions (typically Information Systems). We use the label "classic outsourcers" because they began early – they were the *early adopters*– and they have already engaged in several years of substantial offshore activity. This level of usage is substantial because, according to our estimates, the ratio of IT headcount sourced offshore has reached between 10%-20%, which, within our sample, is at the higher end of the headcount ratio. The experimentation phase began in the early to mid 1990s timeframe, such that the firms have accumulated a relatively long history of offshore work. As a consequence, there are many players inside the corporation who have built confidence in the offshore approach, based on real evidence.

In all cases within our study the Indian offshore units were either the sole or major units involved in offshore sourcing. This is a strategic relationship, with the outsourcing vendor providing tens or hundreds of millions of dollars of services per year. As is increasingly common, one or two large offshore IT Professional Services firms performed much of the work. Two of the four corporations in our sample sourced from just one large Indian firm, a third sourced from two Indian firms, the fourth sourced from a US-based IT Professional Services organization that manages the offshore work to India.

Stage 4: Proactive Strategic Focus

In this stage firms no longer view offshore options as simply sources of low cost work or suppliers of lower-valued work.[vi,vii] Rather, firms view offshore sourcing of IT work as an important and attractive strategy for achieving a range of strategic objectives[viii,ix]. In

addition to the cost controls offshore sourcing is now utilized for strategic purposes such as innovation, new product development, access to new markets, and global growth[x]. In short, offshore sourcing becomes embedded within the culture of the firm.

A key distinction between Stage 3 and Stage 4 is that offshore units of companies in Stage 4 are now developing *new* products or systems. This is significant because it involves domain expertise (or often, "business knowledge"). Domain expertise means an understanding of the subject area of the system: whether it is a financial modeling system for a bank, a consumer web page for a retail company, or a new network management software package to be used by a large company. An illustration of this is one executive from a leading Wall Street firm who told us that looking ahead, his company planned to send complex, turnkey projects offshore, where the entire lifecycle, from requirements gathering through implementation and support, would be handled by the offshore IT professionals.

In Stage 4, managers recognize the need to exploit and leverage global networks of coordinated sourcing nodes. For example, one company in our study set up centers around the globe in order to establish a 24/7 engineering support organization. Coordination of internal corporate markets is optimized to exploit different capabilities, talent, and timelines. While software R&D networks expand and may have units in a dozen nations, Information Systems units try to move to one or two strategic outsourcing vendors (called *preferred* vendors), with a view to developing a deep and intensive relationship. Indeed, some preferred offshore vendors have such a tight relationship with their American clients that they are given special bidding on projects and have other inside access privileges. In essence, these vendors become extensions of the firm's own IT units. This is not dissimilar to the network organizational form[xi] that is typically mentioned in connection with the prevailing business models and governance arrangements of celebrated firms such as Dell and Cisco.

Global coordination of resources pays off in another profound way: in time-to-market. In a hyper-competitive global marketplace there are compelling pressures to quickly bring new products and services to market. A third of our sample of large American corporations noted that *ramp-up* time was an important factor in their offshore relationships (significantly, the technology firms were more concerned about this factor). "Ramp-up" is critical to project-level decision-makers. Once a project is approved, the company wants an immediate pool of labor to begin work, rather than waiting months for employees to finish other projects.

In Stage 4 there is a maturation of the organizational structures that oversee the offshore sourcing centers across the corporate divisions. These oversight units even have names that use the term "global," such as "global engineering" and "global services." The term *global* is chosen because, as one of the executives quipped, *offshore* has some negative connotations.

These global organizational structures have developed sophisticated knowledge about offshore suppliers, their relative merits and demerits, and the pros and cons of a variety of

internal offshore centers. These units put into place new measurement and reward systems that encourage project level decision makers to find the optimal software resources within the corporation. We observed that offshore units were proactively "selling" offshore work within their organizations. Many began by selling experimentation and pilot projects. As one executive put it: "I want some offshore showcase success stories to create a strong pull within the company."

But selling and showcases were only part of the picture. At some corporations, managers were explicitly incented to grow their use of offshore IT labor through strong signals emanating from senior leaders. Some telling illustrations of these messages follow:

> Corporation C… "wants to be a global company. We targeted 51% of [the IT] workforce to be outside of [California, including mostly offshore development centers] as a strategic goal. For comparison today it is just 30% [outside of California]."
>
> "[The president of Corporation D, a Fortune 100 firm] was really challenging us, yelling at us: this is ridiculous, why don't we have 5000 people doing remote [offshore] development. Get out of my office and come back with a graph showing 5000 people working offshore!"

Many of the firms in this stage are *Technology* firms building offshore internal-to-the-firm development centers, which we labeled as "Tech-clique Insourcers." Four firms in our sample clearly fit this archetype. Three of these firms had internal global organizations. The offshore centers form an international network, sometimes with more than one dozen nodes, totaling hundreds or even thousands of software professionals and engineers.

It was our preliminary assessment that technology companies may be more active in offshore sourcing and might behave differently than other companies. For example, IBM, as far back as 1974, spent about 30% of its R&D budget on offshore R&D[xii]. Indeed, the technology companies did behave differently, usually preferring to build internal, rather than external, offshore resources. Surprisingly, some of these technology giants were blending their internal offshore supply of IT units for three quite different organizational functions: software product R&D, internal Information Systems, and for external IT professional services. In one case a firm was supporting all three streams of software work and in another case both product R&D and internal Information Systems work.

Once the Tech-clique Insourcers build these internal offshore organizational infrastructures, they seem to create their own momentum. All four of these organizations "sell" their internal offshore services within the organization. For example, they have brochures (in one the language reads "leveraging worldwide engineering talent"), seminars, proposals, web pages, workshops, and even salespeople to sell offshore services to other divisions within the corporation. Two firms were refining internal marketplaces (or clearinghouses) between internal buyers (product/program managers

worldwide) and internal sellers (the different IT sites around the world) that would match the needs and the skills. These divisions even used classic sales tactics to gain favor with promising internal customers such as pricing a project as a "loss leader," or using the looked-down-upon "staff augmentation" (a form of internal body shopping from low wage nations). The corporate offshore champion often heads the global sourcing organization and travels a great deal. One of the champions we interviewed has been heading the offshore sourcing organization for ten years. Another made a deep personal commitment to the success of the new India center, personally interviewing every single candidate – of several hundred!

The size of each of these Tech-clique Insourcers internal organizations is substantial: Within our sample they encompassed 400, 500, 1000, and 2000 professionals offshore. All four organizations were growing and had aggressive growth plans. Three of these organizations had an extensive network of offshore development and support sites totaling 16, 9, and 6. The fourth firm was focusing primarily on a large center in India.

Why were technology firms building internal offshore centers rather than outsourcing to third parties? After all, outsourcing has become a strategy that American managers have become accustomed to[xiii,xiv]. Indeed, the economics of high transactions cost that drove vertical integration for much of the 20th century have become less relevant as the coordination costs of managing over distance and over organizational boundaries have declined. However, the managers we interviewed saw some clear advantages to *internal* offshore sourcing. Several of these are manifestations of the classic "build versus buy" dilemma that firms have faced for decades – tradeoffs that point to vertical integration and an internal locus of control as a viable option. Our interviewees underscored three advantages to vertical integration. First, as might be expected, ramp-up time is lessened because internal contracting is simpler. Second, there are advantages related to security, confidentiality, and maintaining proprietary knowledge. With an internal offshore unit, all professionals are inside the security firewall with access to internal systems. Furthermore, disclosure concerns are mitigated. Finally, the internal locus of control inevitably promotes standardization of work processes, reducing the project management burden of enforcing consistent development approaches and standards: the internal IT professionals use common software engineering tools and methodologies. Interestingly, in addition to this overt rationale for internal offshore centers, an unspoken element of this decision is the fact that technology companies will more likely choose to maintain a strong in-house technical capability.

Moving up the maturity curve

Is the model deterministic? In other words, do we predict that virtually all large US firms will transition to Stage 3 or 4? The answer to this question is in the affirmative. We believe that the trend in offshore IT work parallels labor shifts in other industries, most recently in electronics, textiles, and automobiles. The economics of sending IT work offshore is compelling, from both a production and transactions cost perspective[xv]. More importantly, however, the movement to Stage 3 or 4 is likely to occur as a result of broader economic forces. The elimination of trade barriers, the push for globalization

coupled with the associated shift in corporate culture away from a domestic mindset, and the development of technologies that transcend time and space barriers will inevitably drive the corporation towards seeking IT talent offshore. Doubtless, not all companies will send all their IT work offshore. And not all firms will evolve to the most mature stage in the model. We expect firms where IT is not a significant source of competitive advantage to progress to Stage 3 and reach a steady state here. For such firms the additional advantages of developing the sophisticated internal mechanisms required for Stage 4 maturity are moot. By contrast, firms where IT is a significant source of competitive differentiation, either because of the cost efficiencies that IT offers, or because IT is a core component of the products and services the firm provides, the optimal evolution is to Stage 4.

There is little doubt that the offshore momentum was very strong through 2000, through the peak of the technology boom. The so-called "IT labor shortage," which peaked in 2000 created unfilled demand in the US. The US-based ITAA estimated the US shortage at 850,000 in 2000 and, more recently, 425,000 in 2001. It is noteworthy that other nations experienced "shortages" in 2000: in Europe the shortage was estimated at 1,700,000 and in Canada it was 50,000.

The offshore IT boom slowed somewhat in 2001, but does not appear to have declined substantially. It is our assessment, the general trend in the growth of offshore sourcing of IT work is upward moving. However, putting a figure on the overall magnitude of the offshore phenomenon is difficult. A recent estimate puts the figure at $7 billion growing to more than $17 billion by 2005. Somewhat narrower figures, though, give us some guidance. The Indian software association NASSCOM estimates that more than 185 of the US Fortune 500 firms engage in offshore outsourcing to India. Forrester, a US consulting firm, found that 44% of US firms with over $1 billion in revenues had offshore IT activities in 2001, growing to 67% by 2003. In our own study of large American firms, we found that the median ratio of IT headcount sourced outside the US for work consumed largely in the US was 6.5%. Rephrased, this means that at a typical major US corporation, six of every one hundred IT professionals engaged in software-related work for the US market are offshore.

The increasing prevalence of offshore sourcing is further supported by our qualitative field data. 11 of the 13 large corporations in our sample were expecting continued offshore growth, many of them in substantial ways with aggressive goals. Several corporations mentioned growing offshore by double-digit rates. Numerous companies were planning to move much – or even all – of their systems support and product support functions abroad, mostly to India. One of these corporations estimated the annual budget allocation that will be devoted to offshore IT at $1 billion. Furthermore, companies were investing in infrastructure to grow offshore work. The technology firms were focusing on internal offshore infrastructure building. For example, one technology company was planning to grow six of its many offshore centers. Another was planning to expand its India center by a factor of three within a one-year timeframe while also expanding its workforce in Russia, as well as looking for another country to site in. Finally, recent anecdotal evidence (from our on-going research) suggests that the growth in offshore

sourcing is not limited to large corporations alone: even small and medium sized enterprises are turning their sights offshore in search of low-cost and high quality IT talent.

From a broader perspective, the growth of offshore sourcing of IT work raises a significant issue. Mmuch has been said about a key risk of outsourcing and its corollary, offshore souring: that American corporations will eventually turn into *a hollow corporation*[xvi]. In the extreme the hollow corporation becomes analogous to an empty shell with no sustainable advantage, no proprietary know-how, and no core competency. The only advantages the corporation can continue to hold are its intellectual property: its trade secrets (Coca Cola), its quasi-monopoly copyright protected position (Microsoft), or its patents.

"Hollow" corporations follow Vernon's classic international product cycle[xvii] in which a new product begins with highly skilled entrepreneurial activities, moving to foreign direct investment in low-wage (offshore) nations, and then, as the product standardizes, it is mass-produced with cheap low skilled labor. Perhaps, IT work will follow in the footsteps of manufacturing. Will we see a repeat of U.S. electronics, semiconductors, and auto manufacturing in which the US was once the dominant global designer and manufacturer?[2] We believe that US firms will continue to have a core competency in those elements of IT work which cannot be easily disaggregated[xviii]. These are the design-related tasks that require rich, proximate interaction with customers. All the technologies and organizational mechanisms we have can only partially compensate for the distance introduced between client and distant, offshore units.

The maturation of the global supply side

The assertion that offshore sourcing of IT work is likely to grow going forward is supported by the maturation of the global supply of IT labor. While the labor market was tightening in industrialized nations in the 1990s, the offshore supply of IT labor grew rapidly. The Indian IT industry employed approximately 340,000 software professionals in 2000 within roughly 3000 offshore vendors. India is producing 122,000 software engineering graduates every year. Russia has several thousand software professionals working in offshore firms and countless other scientists and engineers working (and moonlighting) as programmers. There are between 100-160 offshore vendors in the Russian marketplace.

[2] Some US companies have been labeled as hollow corporations: Nike, which has shifted production to low cost offshore sites, is one such case, is still doing well. Old-line US bicycle manufacturer Schwinn moved all its manufacturing offshore and eventually lost its advantage. In these industries, over time, manufacturing, and later high value added design activities moved to offshore. However, Kotabe (1992), finds a positive relationship between the hollowness of U.S. multinational corporations and their global market share. He also finds a positive relationship between offshore sourcing and US firms' innovation propensity.

US firms are now outsourcing IT work to the four corners of the globe: near-shore to Canada, Mexico, and the Caribbean, and to far away locations such as the Philippines, Russia, China, and most importantly, India. The firms within our sample had development and support units in 26 of the nations of Figure 2.

Most notably, of our sample's major corporations with some offshore activity already under way-- all (100%) had at least some activity in India. Indeed, India dominates the mental model of US executives because it balances low-cost, high-quality work processes, a cadre of highly professional firms, a large supply of qualified labor, an English-speaking workforce, and several other favorable factors.

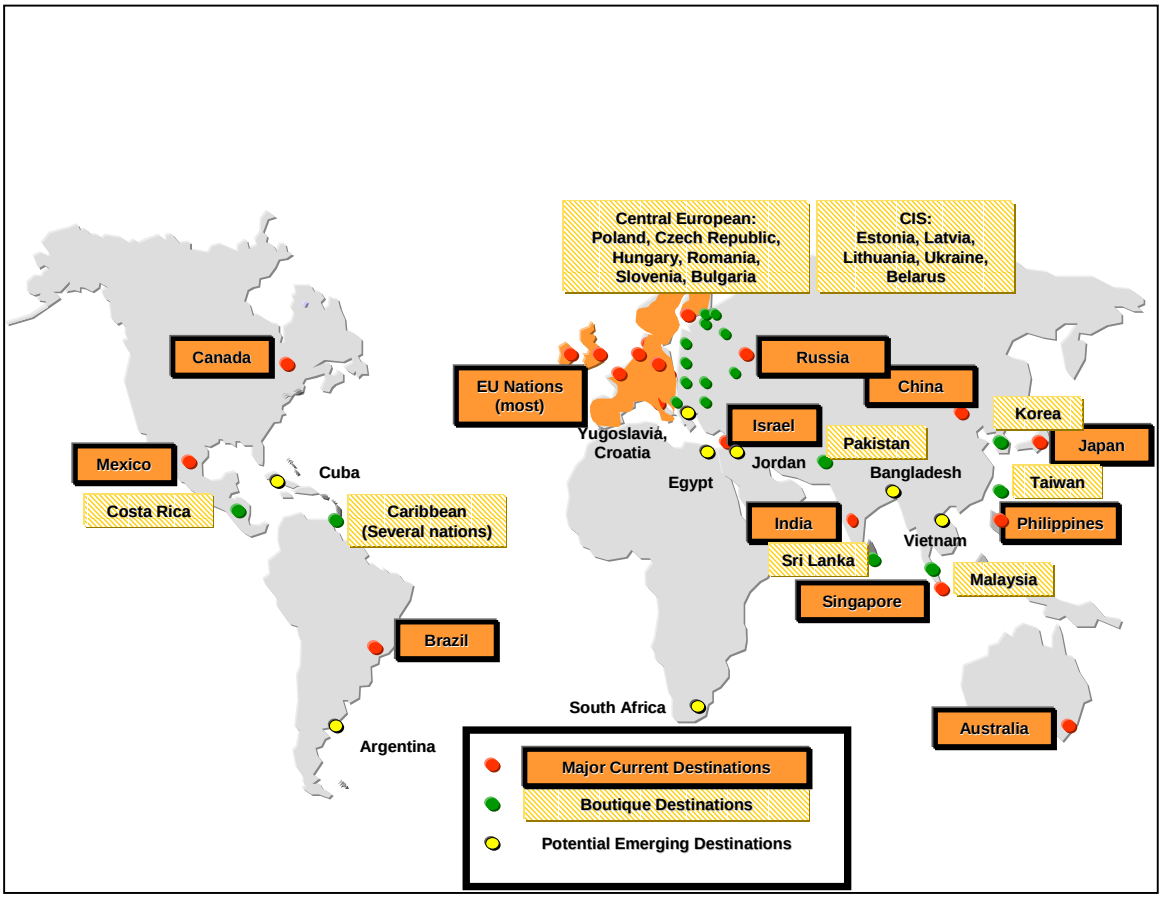

Figure 2: Offshore IT destinations for US firms.[3]

India also dominates the offshore scene because it has built a cadre of highly professional IT services firms, Tata Consultancy Services, Infosys, and Wipro, to name a few, that today are competing with the American global powerhouses of EDS, Accenture, PWC and others. These firms have positioned themselves to compete with US firms by

[3] We classify these nations into three categories: (1) major offshore sourcing destinations, where over 95% of US offshore IT sourcing activity is taking place; (2) "boutique" sourcing destinations, which are nations with IT sectors that have at least several significant firms doing IT work; and (3) potential destinations in coming years, that include potential emerging nations with an educated workforce beginning to vie for IT work.

building large "onshore/offsite" centers in many US cities. Of the 23 firms worldwide that have been accorded CMM-5 status for the quality of their software engineering processes (the highest such level), 15 of them were Indian. Finally, India offers another advantage which few other nations can match – scalability – the potential to grow an offshore software center to hundreds of IT professionals if desired. Only two other large nations have the *potential* for scale – China and Russia – but these lack the managerial resources to grow large-scale global businesses as the Indians have done successfully.

In summary, CIOs will soon have an even larger set of offshore options. The traditional locations for offshore talented are being supplemented by a variety of boutique and emerging destinations. For firms that are just beginning to learn about offshore IT sourcing (i.e., those in Stage 1 or Stage 2), choosing an offshore destination from the "major offshore destination" category is likely to be most advantageous, as the mature supply there will offset the inexperience of the outsourcer. In contrast, Stage 3 and Stage 4 firms can seek to develop strategic relationships with outsourcers from any of the potential destinations, since managers in these customer firms have already accumulated knowledge and experience in managing such relationships.

Conclusions

Firms globalize for many reasons: to expand sales, to acquire resources, to diversify supply sources, and to minimize competitive risk. The relatively recent trend of offshore sourcing of intellectual labor, rather than manufacturing capacity or natural resources, is one of the more recent outcomes of globalization. Collectively our findings suggest that practitioners who are not currently engaged in offshore sourcing of IT work need to carefully examine their sourcing strategies for IT competencies. The challenges of offshore work notwithstanding, there are compelling arguments for exploiting location-specific advantages. The leading firms in our sample recognized these advantages and are positioning themselves to fully reap the benefits. Others who were unable to make the move speedily are actively seeking ways to overcome the structural and cultural barriers.

How can a CIO ensure a smooth evolution to Stage 3 or Stage 4 of the maturity model? We offer, below, some insights derived from our interviews. As noted earlier, firms looking to progress to Stage 3 or Stage 4 of the model must purposively seek to avoid ad-hoc behaviors with regard to offshore sourcing. Additionally, managers need to pay careful attention to providing visibility to the offshore effort, nurturing the internal culture, and internationalizing the company.

By its nature, offshore sourcing is a strategic choice and must be accorded the same importance and visibility throughout the company as any other strategic initiative. Managers need to support champions who are willing to step up to the risks of the effort and seek the cooperation of others who have wide and far-reaching networks inside the company and are well-respected opinion leaders. Most significantly, senior executives must display management commitment to and involvement in the initiative: if employees

sense that the effort does not have the backing and support from the executive suite, resistance is more likely to surface.

The use of offshore resources inevitably creates uncertainty and turmoil among internal staff. Employees fear an undermining of the centrality of their roles; they may have a hard "letting go" of their products and projects; they may fear reduced responsibilities; and worst of all – they may fear being displaced. Managers worry about having to manage resources over which they have limited control, and yet the performance of these resources will drive their own evaluations. Such fears will derail the offshore effort even before it gets off the ground. These impediments and barriers must be overcome through a broad-based communication program, along with clear policies regarding the impact that the offshore resources are likely to have on the existing employee base.

Finally, offshore sourcing of IT is all about making the divisional and organizational boundaries of the firm porous. An offshore effort is likely to fail if employee attitudes and behaviors are narrow-minded and inward looking. Most offshore projects require co-mingling of offshore and onshore resources including corporate business staff, internal domestic development, and offshore developers. Such team efforts can only be successful if employees are able to reduce any actual or perceived cultural distance from their teammates. Internationalization can be accomplished in many ways: by increasing diversity in the ethnic backgrounds of employees, through cultural awareness programs, maybe even overseas sabbaticals for key staff!

Appendix: Study Methodology

The Sample

We used a stratified sample to purposively select corporations from among the largest US firms from both technology and non-technology groups (see Table 1). We hypothesized that technology companies may be more active in offshore sourcing and might behave differently than non-technology companies. We purposefully chose only US-headquartered firms.

Major Technology firms	Prototypical firms in this category include Motorola, Intel, IBM, Texas Instruments, Microsoft, and Oracle. These are companies that develop software products that either stand-alone or that are embedded in larger systems that may include hardware—all these activities fall under the label of R&D. Some of these firms also perform professional services. In addition, the firms have substantial internal Information Systems needs. A subset of technology firms perform only IT Professional Services. These companies provide systems services such as consulting, contracting, outsourcing, and systems integration. For example, Accenture, one of the largest US firms in this category, has large offshore development centers in the Philippines and India.	6 from the 200 largest US technology firms (*Fortune 500*, 2000) 2 from the 20 largest US IT Professional Services firms (ranking by *Global Technology Business*, 1999)
Major Non-Technology firms	Most of the US Fortune 200 fall within this category, e.g., financial services, manufacturing, retail.	5 from the 200 largest US non-technology firms (*Fortune 500*, 2000)
Total		**13 total, including 3 of the Top10 in the Fortune 500**

Table 4: Sample summary.

Data collection approach

We interviewed 20 executives from 13 corporations with many follow-up messages and conversations. Respondent titles included head of global software engineering; head of enterprise development services, director of global strategic IS planning. Interviews were conducted between January 2000 and October 2000 and represented numbers and events at the point in time when the interview was conducted. Interview data were juxtaposed with publicly available data about the firms and analyzed utilizing qualitative methods. Specifically, we examined the interview transcripts using two distinct lenses: the first lens was constructed based on research questions stated a priori, i.e., we sought "factual" data related to the extent of sourcing, the decision drivers, the rationale for siting decisions, and the internal corporate dynamics. During this analysis we also discovered additional tactics and processes being utilized by firms – for instance, the findings shed light on how offshore work was incented, and how projects were controlled and orchestrated. The second lens we utilized to make sense of the data was to ascertain if there were any patterns we could detect in the way sample firms were utilizing global sourcing of IT work, and what contingencies appeared to distinguish between the patterns.

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