Proven Practices for IT Offshore Outsourcing

by Joseph W. Rottman and Mary C. Lacity

As the global sourcing of IT development continues to increase, firms struggle to maintain quality while pursing the labor arbitrage available offshore. Based on more than 100 interviews with participants from US firms, their offshore suppliers, and their legal and intermediary firms, this *Executive Report* presents 28 lessons for shortening the offshore learning curve and effectively engaging offshore vendors.
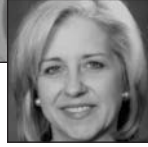
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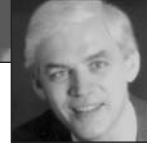
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Few IT management practices have sparked as much controversy as offshore outsourcing of IT work. Front-page headlines consist of variations on the question "Will outsourcing hurt America's supremacy?"[1] Meanwhile, other articles claim offshore outsourcing is stealing American IT jobs and dragging down US IT bonus pay.[2] US companies that outsource offshore are blacklisted on some television shows, such as CNN's *Lou Dobbs Tonight*. Despite the controversy surrounding offshore outsourcing, the market is growing faster than predicted, and many consulting firms predict that the rate of offshore job transfer will continue to increase.

This growth is due to the positive effects of offshore outsourcing on US IT jobs, IT productivity, IT costs, and IT quality.[3] The Cato Institute — a conservative public policy research foundation headquartered in Washington, DC — argues that over the next eight years, offshoring low-paying IT jobs will create newer and higher-paying IT jobs in the US. Michael Perry, CEO of IndyMac Bank (in terms of assets, the 10th largest thrift nationwide), attests to this; between 1993 and 2004, IndyMac created 5,000 new US-based jobs as the company grew. This growth was fueled in part by low-cost offshore outsourcing, including the offshoring of 25% of IndyMac's IT staff.

Concerning IT productivity, global production of IT hardware reduced total hardware costs by 30%, resulting in an additional US $230 billion in US gross domestic product between 1995 and 2002. Some sources anticipate similar effects on productivity in software.[4]

Finally, an IBM Business Consulting Services survey found that 82% of IT managers reported cost savings of 10%-50% from offshoring; further, 68% of respondents claimed some or significant quality improvement.[5]

While such studies show the benefits of offshoring IT work, detailed lessons based on actual customer and supplier experiences are still essential. For the past 15 years, we have studied domestic IT outsourcing (where customers outsource to suppliers in their own country). A number of our best practices, management frameworks, and relationship

models have been covered in previous Cutter Consortium reports.[6] Our current research identifies the best, worst, and emerging practices for offshore IT outsourcing and compares these practices with our prior knowledge. Based on funded research from the University of Missouri–St. Louis, we present findings from interviews with 101 participants. This group comprised US customers, suppliers, and key intermediary consulting and legal firms with substantial offshore outsourcing practices. Participants shared their lessons learned regarding the four following offshoring challenges:

1. How can US organizations develop and implement a global sourcing portfolio?

2. How can US organizations mitigate risks?

3. How can US organizations effectively work with offshore suppliers?

4. How can US organizations achieve cost savings while ensuring quality?

The result was the identification of 28 proven practices for addressing offshore challenges. In this *Executive Report*, we discuss each lesson and group the 28 practices according to the four questions listed above. As we discuss these

lessons, we'll relay experiences from some of the many *Fortune* 500 and other companies we interviewed. To ensure the anonymity of our participants and their companies, we use generic pseudonyms (i.e., Retail, Biotech, and Financial Services 1). A complete list and description of all the participants can be found in Appendix A. Although these 28 practices have been distilled from more than 100 interviews, to illustrate the knowledge the majority of these firms have gained, we concentrate on the journeys of four major participants, which we refer to as the following: Retail, Biotech, Manufacturer 1, and Manufacturer 2. Brief histories of these four companies are provided in Appendix B. Before we detail each lesson, let's look at a brief comparison of these findings compared with domestic outsourcing practices (see Table 1).

For CIOs, the good news is that some practices for managing domestic outsourcing do indeed apply to offshore outsourcing. In particular, six best practices are equally important for both domestic and offshore outsourcing, including (1) escalating the strategic importance of new sourcing options (such as offshore) after conquering the learning curve; (2) creating a centralized program management

office (PMO); (3) selecting suppliers by considering 12 supplier capabilities; (4) using pilot projects to mitigate business risks; (5) developing meaningful career paths for inhouse staff; and (6) creating balanced scorecard metrics.

Meanwhile, 13 of the 28 practices apply to both domestic and offshore outsourcing, but they are more important for offshoring because the risks and transaction costs are greater and the delivery teams are more remote and culturally diverse. While Table 1 shows all 28, this discussion points to the most important offshoring practices: selecting a sourcing model to balance costs and risks; openly communicating the sourcing strategy to minimize domestic worker backlash; using real-time dashboards to verify, synchronize, and manage workflows; and hiring an intermediary consulting firm to serve as a broker and guide to foreign countries, cultures, and suppliers.

Finally, as Table 1 shows, nine of the practices are unique to offshoring. One intriguing offshoring practice is that of giving customers a choice between domestic and offshore outsourcing. PMOs can publish rates for sourcing locales and allow business-unit managers to assess

the tradeoffs between lower costs and greater risks. Other practices unique to offshore outsourcing address the rigid Capability Maturity Model® (CMM®) requirements used by offshore suppliers, bottlenecks caused by substantial time-zone differences, and establishing the ideal inhouse/on-site/offshore ratio.

The companies we interviewed use the 28 practices to successfully exploit offshore resources. As mentioned previously, Appendix B presents illustrative customer experiences from four US firms that ventured through several stages of offshore outsourcing. These mini case studies provide rich descriptions of the underlying challenges of offshore outsourcing and help to further anchor the discussion of best practices presented below. The lessons are organized according to the four questions listed above.

PRACTICES FOR DEVELOPING AND IMPLEMENTING A GLOBAL SOURCING PORTFOLIO

Most of our interview participants are veterans of domestic US outsourcing. They ventured offshore primarily to seek lower costs on short-term projects, such as Y2K during the late 1990s. Early adopters faced several challenges, and the practices discussed in this section can help CIOs quickly ramp up to create a global sourcing portfolio.

Table 1 — Proven Offshore Management Practices

Sourcing Challenge	Practices to Overcome the Challenge	Equally Important for Domestic and Offshore	More Important for Offshore	Unique to Offshore
How can we develop and implement a global sourcing portfolio?	1. Escalate the strategic importance of new sourcing options after conquering the learning curve.	X		
	2. Select an offshore outsourcing destination based on business objectives.			X
	3. Select an offshore outsourcing model that balances costs and risks.		X	
	4. Create a centralized program management office to consolidate management.	X		
	5. Hire an intermediary consulting firm to serve as offshore broker and guide to the hosting country, suppliers, and culture.		X	
	6. Select suppliers by considering 12 supplier capabilities.	X		
How can we mitigate risks?	7. Use pilot projects to mitigate business risks.	X		
	8. Give customers a choice of sourcing location to mitigate business risks.			X
	9. Hire a legal expert to mitigate legal risks.		X	
	10. Openly communicate the outsourcing strategy to all stakeholders to mitigate political risks.		X	
	11. Use secure information links or redundant lines to mitigate infrastructure risks.		X	
	12. Use fixed-priced contracts to mitigate workforce risks.		X	
How can we effectively work with suppliers?	13. Design effective organizational interfaces.		X	
	14. Elevate your own organization's CMM certification to close the process gap between you and your supplier.			X
	15. Bring in a CMM expert with no domain expertise to flush out ambiguities in requirements.			X
	16. Negotiate the CMM documents for which you will and will not pay.			X
	17. Tactfully cross-examine, or even replace, the supplier's employees to overcome cultural communication barriers.		X	
	18. Require the supplier to submit daily status reports.			X
	19. Let the project team members meet face-to-face to foster camaraderie.		X	
	20. Consider innovative techniques, such as real-time dashboards, to improve workflow verification, synchronization, and management.		X	
	21. Manage bottlenecks to relieve the substantial time-zone differences.			X
How can we ensure cost savings while protecting quality?	22. Consider both transaction and production costs to realistically calculate overall savings.		X	
	23. Size projects large enough to receive total cost savings.		X	
	24. Establish the ideal inhouse/on-site/offshore ratio only after the relationship has stabilized.			X
	25. Give offshore suppliers the domain-specific training to protect quality and lower development costs.		X	
	26. Overlap onshore presence to facilitate supplier-to-supplier training.			X
	27. Develop meaningful career paths for subject matter experts, project managers, governance experts, and technical experts to help ensure quality.	X		
	28. Create balanced scorecard metrics.	X		

Lesson 1: Escalate the Strategic Importance of New Sourcing Options (Offshore) after Conquering the Learning Curve

Few US organizations we studied approach offshore outsourcing from a strategic perspective at the outset. Most US organizations initially engage in offshoring for tactical reasons, such as seeking lower labor rates for staff augmentation on specific projects. During this early-adopter phase, offshoring PMOs are often erected as separate entities from domestic outsourcing offices to test the proof of concept. It isn't until after pilot tests are completed, supplier relationships are established, and viability is proven that CIOs seek more strategic uses of offshore resources. This incremental approach is wise because US organizations may first need to gain experience with new outsourcing options at an operational level before seeking more strategic objectives.

Figure 1 illustrates the typical customer learning curve for offshoring. During phase 1, CIOs become aware of offshoring through marketing hype ("You'll save 60% on your IT costs") or irrational propaganda ("Software outsourcing will hurt America's supremacy"). CIOs quickly learn about potential benefits, costs, and risks through discussion with peers and consultants and by reading research. Most CIOs initially engage in offshoring (phase 2) to seek lower costs, primarily through the favorable labor arbitrage. During pilot testing, CIOs learn about the immense amount of inhouse management required to work effectively with offshore suppliers and achieve real cost savings (lessons 13-28, below). As learning accumulates, CIOs move to phase 3, at which point they exploit offshoring for quality as well as cost reasons. During our interviews, participants repeatedly stated, "We went for the price; we stayed for the quality."

In phase 4, more mature adopters use offshore outsourcing to strategically enable corporate strategies, such as increasing business agility, bringing products to market more quickly and cheaply, financing new product development, accessing new markets, or creating new business. Our research indicates that these strategic initiatives often evolve over time. Two examples below illustrate the evolutionary nature of strategic offshore exploitation.

Agility, which offshore outsourcing enables, is a key strategy for companies that operate in cyclical business environments. Through creative sourcing arrangements that permit speedy commitment to and divestiture of human capital, business agility allows organizations to enable flexible staffing while continuing to nurture business innovation.[7] Financial Services 1, for example, uses offshore resources primarily to enable strategic agility. It has captive centers in Manila, the Philippines, and Mumbai, India, as well as various joint ventures and fee-for-service relationships with 14 Indian suppliers. During the refinancing boom, the company was able to beat competitors by quickly meeting the immense surge in demand for IT
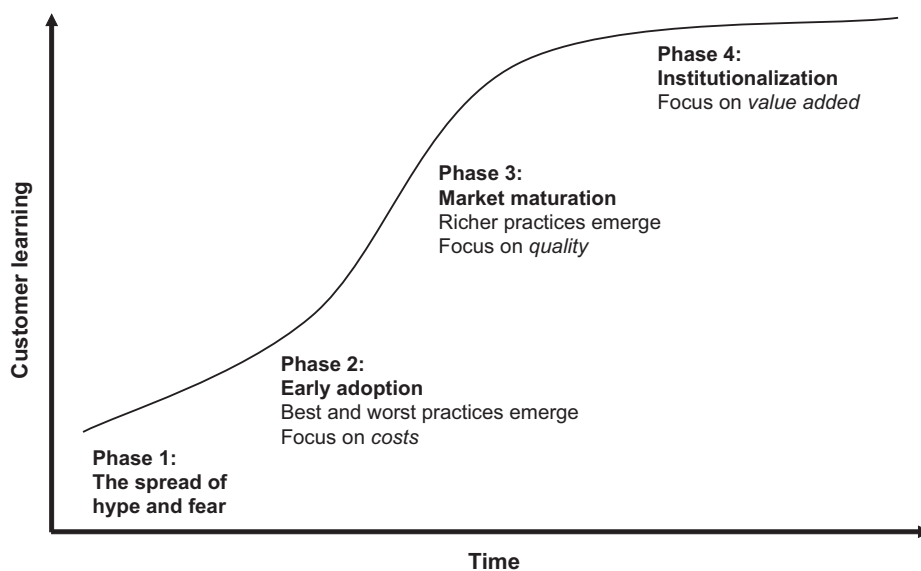

Figure 1 — The offshoring learning curve.

and business process services. As the refinancing bubble burst, the company was able to immediately scale back resources.

Financing new product development, which offshoring enables, is a key strategy for small companies trying to compete with the deep pockets of larger players. A small US-based healthcare services organization wanted to develop a software product to provide information for a quick response to biological terrorism. Because the organization is short on funds, it used an offshore supplier to finance the development of the new system. Under this agreement, the supplier owns the intellectual property rights but the customer organization will market the application. Both parties will share software licensing fees when the product goes to market.

Lesson 2: Select an Offshore Outsourcing Destination Based on Business Objectives

The majority of literature suggests that CIOs select offshore destinations by focusing solely on relative country advantages regarding IT costs and risks. Consulting firms are a major source of information for CIOs, providing comparative analyses of offshore IT destinations based on relative advantage of government support, IT labor pool characteristics, cultural compatibility, and so forth. We looked at several consulting firms' data, and using any set of criteria, India ranks as a top locale because of government support, tax-free

technology parks, the presence of an excellent labor pool (with an IT workforce of half a million people and growing), low — though rising — hourly IT wages, high English proficiency, and high-quality suppliers as evidenced by the largest number of CMM Level 5–certified organizations on the planet. However, several of our interview participants said that they are concerned about India's rapid growth. Some participants believe that India is becoming saturated (in particular, the city of Bangalore), that salaries will continue to rise and thus erode savings, and that the immense turnover among Indian firms, particularly for workers with two to five years of experience, will remain high. Those focusing solely on IT costs and risks are looking at Indian cities other than Bangalore or venues such as the Philippines.

Most of our participants, however, selected destinations based on more than IT-driven considerations. Instead, CIOs used broader business criteria by considering the company's strategic objectives and overall commitment to certain destinations. For example, one aerospace company selected Malaysia as its IT offshoring destination because it hopes to sell planes in that country. The Malaysian government requires that some of the manufacturing be done in Malaysia, and the IT presence will certainly help to meet that requirement. Another hardware company selected

China because it hopes to sell computers there. Other participants selected offshore locations where they have existing manufacturing or R&D facilities. The existing facilities serve as a launchpad, with current employees serving as guides to the country, suppliers, and culture. One US customer chose Canada because it wants suppliers close by in order to help it better service its end customers.

Lesson 3: Select an Offshore Outsourcing Model That Balances Costs and Risks

CIOs need to access the various models for leveraging offshore resources. The four most prevalent offshore sourcing models are captive, joint venture, build-operate-transfer (BOT), and fee for service (see Table 2).

With the captive model, the customer builds, owns, staffs, and operates its own offshore facility. Captive centers provide the greatest amount of control but also carry the greatest amount of risk. For this reason, CIOs select the captive model only if they have a substantial commitment to a country in terms of a large volume of IT work over a long period of time. EDS, Accenture, Dell, Intel, and IBM Global Services all have captive centers. According to the CEO of an intermediary offshore consulting firm, most US IT suppliers need captive centers to maintain competitive service rates.

Table 2 — Offshore Sourcing Models

	Captive Model	Joint-Venture Model	Build-Operate-Transfer Model	Fee-for-Service Model
Description	The customer builds, owns, staffs, and operates offshore facility.	The customer and supplier share ownership in offshore operations.	The supplier owns, builds, staffs, and operates the facility on behalf of the customer; ownership and employees transfer to the customer after completion.	The customer signs a contract for services in exchange for paying the supplier a fee.
Set-up cost, financial risk, operational risk	Highest	High	Medium	Low
Ability to control	Highest	Depends on the amount of ownership	Medium	Low
Example	IBM	TRW-Satyam	PeopleSoft	All 14 firms interviewed for this report

IBM created a captive center in India to reduce IT costs for one of its large customers, AT&T. At the time, AT&T had a seven-year contract with IBM worth nearly $1 billion. The AT&T CIO pushed IBM to create a captive center rather than build one himself. He was willing to trade off some initial cost savings for greater operational control and long-term financial gains. Today, nearly 40% of AT&T's application development is done offshore through IBM's captive center, with AT&T allegedly receiving a cost savings of 30%.[8]

With joint ventures, the customer and supplier share ownership in the offshore facility. Customers such as CSC Corporation, Perot Systems, and TRW Automotive, Inc., chose this model over the captive model because they wanted to sacrifice some control in exchange for the supplier bearing most of the risk.

TRW, one of the world's largest automotive suppliers to original equipment manufacturers (OEMs), created a joint venture with India-based Satyam Computer Services, Ltd. The venture will initially provide enterprise resource planning (ERP), supply chain management, and e-business applications to TRW and then hopefully attract external customers as the venture develops automotive capabilities.[9] TRW is the clear winner here; owning 24%[10] in the venture gives Satyam some control, but the company must deliver TRW's IT requirements even if it is never able to leverage the automotive capabilities to attract more customers.

With the BOT model, the supplier owns, builds, staffs, and operates the facility on behalf of the customer. Upon completion, the supplier transfers ownership and staff to the customer. From the US perspective, this model helps bypass legal obstacles because it is easier for a supplier to create a new facility in its own country than it is for a US organization to invest directly. Also, this model enables the US organization to benefit from the supplier's local expertise on construction, utilities, and employment.

PeopleSoft signed a three-year BOT deal with Covansys and Hexaware. The suppliers will build PeopleSoft's India Services Center and India Development Center and hire and train the employees. After three years, PeopleSoft will pay book value

for the facilities and transfer the employees to PeopleSoft at no additional fee.

According to the CEO of an intermediary offshore consulting firm, none of his US customers actually went through with the transfer phase of the BOT model. By then, his customers were comfortable with the supplier and did not want to take over the facilities. One participant said he backed out of the transfer because he didn't know "whom to call when the lights go out, and they do!"

With fee-for-service offshore outsourcing, the customer signs a contract with a service provider that has facilities and staff located offshore. The supplier owns the facilities, employs its own staff, and has its own infrastructure. Contracts are typically fixed price or based on time and materials. By far, this is the most popular offshore outsourcing model because it poses the least amount of risk. US organizations can readily alter the volume of work sent offshore to match fluctuating demand onshore. While the previous models receive much greater exposure in the trade press due to their collaborative and strategic natures, the fee-for-service model is the most widespread. All 14 of the firms in this study have utilized fee for service. For example, since 2001 Financial Services 3 has used Wipro Technologies for staff augmentation (time and materials) and delivery of select projects (fixed price). Although

the Wipro relationship represents only about 5% of Financial Services 3's external IT spend, it has allowed Financial Services 3 to quickly ramp up or scale down without affecting the employment of inhouse IT staff.

Some organizations use multiple models, as illustrated by Financial Services 1. It uses captive centers, joint ventures, and fee-for-service relationships with 14 Indian suppliers. Other organizations switch models after conquering the learning curve. One of our participants from Financial Services 6 began with a fee-for-service model. But as volume of work increased to 3,000 full-time equivalents, the customer began to consider moving to a captive center. According to the vice president of technologies at Financial Services 6, "Once I have a very good feeling about how the Indian market is progressing, I plan to move to a captive center and recoup the margin my vendor is currently gaining."

Lesson 4: Create a Centralized PMO to Consolidate Management

PMOs set up preferred supplier relationships, negotiate contracts, assess overall performance, define best practices, and disseminate learning. This best practice is not unique to offshoring. The issue here is whether CIOs should create a separate PMO for offshoring or integrate offshoring into an existing PMO. Participants suggest that CIOs should create a separate office if the offshore

initiative represents a significant departure from domestic outsourcing practices or if they intend to create a captive center or joint partnership that will require dedicated management. CIOs should create an integrated PMO if they want business requirements to drive the supplier selection and if they want the onshore and offshore suppliers to aggressively compete.

Retail, a *Fortune* 100 company, used competition managed by the integrated PMO to cut the domestic supplier rates by 10%-50%. When Retail decided to integrate its offshore PMO into its existing vendor management system, the results were immediate and dramatic. Prior to exploring offshore vendors as a solution to its considerable Y2K issues, Retail was actively engaged with 35 domestic contractors. The addition of offshore providers to the supplier portfolio caused domestic providers to lower their costs. According to Retail's director of contract management:

> We were paying about $100 for commodity-type coding [with domestic suppliers]. The domestic suppliers saw the writing on the wall. We put out a bid to the approved list of domestic contractors, and the current director of the PMO made it very clear that we were not going to pay those kinds of prices anymore. Our domestic prices dropped from about $100 per hour to $80, and some of the rates even dropped into the $50 range for some services.

This integration also allowed a variety of vendors to compete head-to-head on capabilities and project schedule in addition to cost. This allowed Retail to compare the various value propositions from the domestic contractors with the offshore contractors and expand their understanding of the offshore market.

Lesson 5: Hire an Intermediary Consulting Firm to Serve as an Offshore Guide to the Hosting Country, Suppliers, and Culture

The intermediary consulting market is certainly growing fast, with players such as neoIT, SourceQuest, SoftAccess, Cincom, TPI, and Providio Technology Group. Some experts estimate that by 2005, intermediaries will broker 64% of offshore contracts.[11] Biotech, one of our case companies, certainly found value in hiring an intermediary. A global leadership team member said,

"I think it absolutely engaged us more quickly with respect to them informing the offshore vendors of our situation and setting up the arrangements. We would have had to spend a lot more of our own time with all of that. So I think it streamlined the initial process."

The intermediary consulting firms are also moving up the value chain by offering offshore project management training to US customers, training joint teams on cultural compatibility, creating transition plans, and developing project metrics.

Lesson 6: Select Suppliers by Considering 12 Supplier Capabilities

Concerning offshore suppliers, there are many choices. Some US CIOs move offshore via one of their domestic suppliers such as EDS, IBM, or Accenture. Certainly

AT&T preferred to move offshore through its existing partnership with IBM rather than try to build a new relationship with a new supplier in a new country by itself. Some customers, such as Financial Services 3, prefer to select established offshore suppliers like Wipro because of their maturity and stability. Other customers, including Biotech, look for smaller niche suppliers with domain expertise.

We should note, however, that CIOs often make one major mistake when assessing suppliers: they assess the supplier's resources such as physical facilities, technology, and workforce composition rather than the supplier's capabilities to effectively manage and deploy these resources for the customer's benefit. For example, many senior executives ask for evidence of excellent supplier employees. This assessment does not distinguish among suppliers; all credible suppliers have excellent people. Instead, senior executives need to ask about the supplier's behavior management capability: how does the supplier motivate and manage people to deliver service through a customer-focused culture?

A better way to assess the myriad suppliers is to consider the 12 supplier capabilities model created by David Feeny, Mary Lacity, and Leslie Willcocks (see Figure 2).[12] The 12 capabilities establish the basis for the following three supplier competencies:
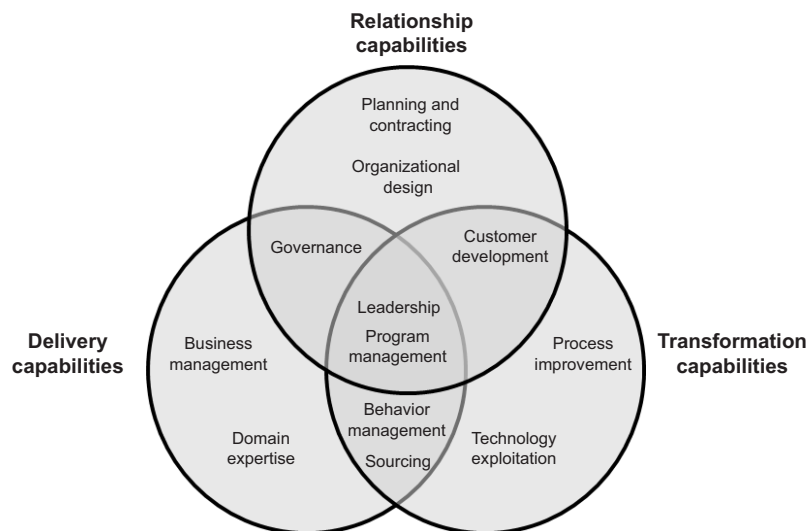

Figure 2 — The supplier capabilities model.

1. **Relationship competency** — the ability to create aligned incentives between the customer and the supplier

2. **Delivery competency** — the ability to deliver daily operations while still generating a good supplier margin

3. **Transformation competency** — the ability to meaningfully transform the customer's operations to decrease costs and improve service

High-level definitions of the 12 capabilities are found in Table 3. Although a detailed explanation of the capabilities is beyond the scope of this report, a few examples illustrate how the model can be used to compare suppliers.

First, consider the leadership capability, defined as the ability to identify, communicate, and deliver the balance of delivery, transformation, and relationship activities to achieve present and future success for both client and provider. After completing 76 case studies of customer-supplier relationships in IT outsourcing, we have found that the main differentiator between success and failure was the individuals who were leaders of the supplier (and client) account teams.[13] Leaders must operate as the CEOs of relationships rather than as traditional account managers now delegated to the business management capability. Supplier leaders must also have significant clout within their parent organization to mobilize resources on behalf of their clients. For example, one US customer was initially thrilled when the supplier hired a high-powered managing director

Table 3 — 12 Supplier Capabilities Defined

Supplier Capability	Definition
1. Leadership	The capability to identify, communicate, and deliver the balance of delivery, transformation, and relationship activities to achieve present and future success for both the client and provider.
2. Planning and contracting	The capability to develop and contract for business plans that deliver win-win results for customer and supplier over time.
3. Organizational design	The capability to design and implement organizational arrangements to realize plans and contracts.
4. Governance	The capability to define, track, assess, and fix performance.
5. Customer development	The capability to transition users of an internally provided service to customers who make informed decisions about service levels, functionality, and costs.
6. Process improvement	The capability to design and implement changes to service processes to meet improvement targets.
7. Technology exploitation	The capability to swiftly and effectively deploy technology in support of critical service improvement targets.
8. Program management	The capability to prioritize, coordinate, ready the organization, and deliver across a series of interrelated projects.
9. Sourcing	The capability to access whatever resources are required to deliver service targets.
10. Behavior management	The capability to motivate and manage people to deliver service with a front-office mindset.
11. Domain expertise	The capability to apply and retain sufficient professional knowledge of the process domain to meet user requirements.
12. Business management	The capability to consistently deliver against both customer service-level agreements and suppliers' own required business plans.

specifically to serve as account leader. However, this outside hire was ineffective in gaining resources and attention at supplier headquarters because no one knew him. The point is that the supplier leader must not only be an excellent CEO of the relationship but must also have significant clout within his or her own organization.

Second, consider the behavior-management capability, defined as the capability to motivate and manage people to deliver service with a front-office mindset. All major offshore or global suppliers, such as Infosys, Wipro, Tata, Accenture, EDS, IBM, CSC, Unisys, HP, CGI, and ACS have employees to be proud of in terms of experience, skills, and knowledge. While customers tend to ask suppliers for proof of workforce quality such as résumés, average years of experience, turnover rate, and certifications, this evidence will not serve to differentiate suppliers. Customers should also ask for evidence that the workforce is empowered, satisfied, and customer-oriented. How do suppliers orient new employees toward their culture? How do they reward and encourage employee behavior?

We found one small Indian offshore supplier, S2Tech, with an interesting behavior management capability. To overcome cultural differences, S2Tech's founder and CEO hired Indians who have lived and worked in the US to

serve as project leaders. To overcome substantial time-zone differences, he set work hours in India from 1:00 pm to 10:00 pm to create three hours of overlap with US customers for daily communications. To reduce turnover, he involves entire extended families in frequent parties and outings. He has learned that if spouses, parents, and children are actively involved in the company, then the family conspires to retain employees. He provided several examples of how this culture directly benefits his US customers, including the following anecdote. One US customer needed an important deliverable by a Monday that coincided with an Indian holiday. To meet the deliverable, the S2Tech team members cancelled their holiday plans and worked through the weekend. Understanding the effect of this overtime on both the team members and their families, the CEO financed an alternative weekend trip to India's version of Disneyland.

To summarize, CIOs cannot merely assess supplier resources and hope to achieve high performance. Instead, senior executives must assess suppliers based on the 12 specific capabilities listed in Table 3.

PRACTICES TO MITIGATE OFFSHORE RISKS

All CIOs are aware of the risks associated with offshoring including business, legal, political,

workforce, social, and logistical risks (see Table 4). We asked participants to provide specific examples of successful risk mitigation practices. They identified common, but important, best practices such as using pilot projects, hiring legal experts, and openly communicating the offshore initiative to assuage fear. Some identified more unique and intriguing practices, such as giving the customer a choice. Let's look at lessons we discovered.

Lesson 7: Use Pilot Projects to Mitigate Business Risks

Biotech brought the concept of piloting to reduce risk to a new level. Biotech choose 17 pilot projects that were mostly small in size, required frequent delivery of milestones, and gave pieces of the same project to two suppliers. For example, Biotech decided that before it would commit to one supplier for a PeopleSoft-to-SAP conversion, it would have two of the large Indian suppliers do small pieces of the conversion. The company experienced much better project leadership from one of the suppliers in terms of on-site coordination, project status reporting, technical fit with Biotech, and superior daily communications. Biotech selected this supplier to complete the entire conversion. Three months later, when Biotech went live with SAP, the Indian supplier was granted an ongoing maintenance contract for seven full-time

equivalents. The overall project was rated a great success.

Pilot projects must be large enough to extract learning and metrics, but small enough to minimize risk. But experts do not agree on the ideal size. According to the CEO of an intermediary consulting firm, pilot projects should be sized at two person-years, representing a project cost between $50,000 and $100,000. According to Biotech, the ideal project size is four full-time equivalents for four months.

Lesson 8: Give Customers a Choice of Sourcing Location to Mitigate Business Risks

When a customer calls E-Loan, he or she is given a choice to process a loan within one day using an Indian-based supplier or to process the loan within two days using a US-based supplier. Such choice allows the customer to determine the priority between speed and location.

Similarly, the CIO of Financial Services 4 allows strategic business units a choice for application development. The business units can source IT from three preferred offshore suppliers managed through the offshore PMO or from domestic suppliers through the domestic office. Rates are lower with the offshore suppliers, but risks are lower with the domestic suppliers. The CIO believes the business-unit managers should be the ones assessing the tradeoffs.

Lesson 9: Hire a Legal Expert to Mitigate Legal Risks

Over the past 15 years, hiring a legal expert for domestic outsourcing has been a standard best practice. Many legal firms specialize in outsourcing, such as Shaw Pittman LLP and Milbank, Tweed, Hadley & McCloy LLP. The need for legal expertise with offshoring is even more pronounced because customers must abide by different legal systems and more regulatory requirements.

In conjunction with our research, we have spoken with nine lawyers that specialize in offshoring. These lawyers help US customers with tax implications, protection of intellectual property, business continuity, regulatory compliance, visa formalities, dispute resolution, and governing

Table 4 — Offshore Outsourcing Risks

Risk Category	Sample Risks
Business	• No overall cost savings. • Poor supplier in terms of capability, service, financial stability, or cultural fit. • Wrong types of activities sent offshore. • Inability to manage the supplier relationship.
Legal	• Inefficient or ineffective judicial system at offshore locale. • Intellectual property rights infringement. • Export restrictions. • Inflexible labor laws. • Difficulty obtaining visas. • Changes in tax laws could significantly erode savings. • Inflexible contracts. • Breech in security or privacy.
Political	• Backlash from internal IT staff. • Perceived as unpatriotic. • Politicians threaten to tax US companies that source offshore. • Political instability within offshore country. • Political instability between US and offshore country.
Workforce	• Supplier employee turnover. • Supplier employee burnout. • Inexperienced supplier employees. • Poor communication skills of supplier employees.
Social	• Cultural differences. • Holiday and religious calendar differences.
Logistical	• Time-zone challenges. • Managing remote teams. • Coordinating travel.

law. Concerning dispute resolution, all the participants focused on the goal of reducing the risks of conflicts that could lead to litigation — and for good reason. We were told that litigation in the Indian court system is frequently a 15-year process. Also, Indian courts do not enforce legal judgments or awards made in the US. In contrast, India will enforce arbitration, so that has become the standard clause for proposing to solve customer/supplier disputes. Concerning tax implications, one participant said that he helped a customer set up operations in Mauritius because it is a tax-free zone. He also determined the amount of ownership in a joint venture required for favorable taxation and negotiated how parties would bear the costs of any tax law changes. Concerning the protection of intellectual property rights, legal experts help by writing further assurance clauses or by establishing a chain of title from employees to the supplier to the customer.

Lesson 10: Openly Communicate the Outourcing Strategy to All Stakeholders to Mitigate Political Risks

At Financial Services 1, senior management viewed offshore outsourcing as a potential way to decrease the immense application backlog caused by the refinancing boom. But senior management chose to keep the pilot project "low key rather than panic the IT staff while we were simply testing the waters."

Suddenly one day, the domestic IT staff showed up for work to find 11 people from India working in cubicles. The domestic IT staff began to panic and question the future of their positions. The Indian workers were isolated and treated with suspicion, if not contempt. The IT staff found frequent reasons for complaining about the offshoring projects. Eventually, the CTO held a town meeting and told staff that no further layoffs would be caused by offshore outsourcing. However, he would replace fewer inhouse IT staff that departed through natural attrition.

In contrast, Biotech was very open about the offshoring pilots and told the internal IT staff that offshore outsourcing was about "doing more with a flat budget" and that no internal IT workers would be fired as a result of offshore outsourcing. Even with open communication, there was some backlash. When dealing with the internal IT staff, a Biotech global leadership team member noted that it is important to separate emotional issues from real ones:

> Different people perceive offshore outsourcing in different ways. And I guarantee we have the full spectrum. We were aware of that and wanted to be sure that it did not impact our workforce in a negative way. So we spent a great deal of time to keep the communications as transparent as possible without trying to needlessly scare people. So it's a tricky balance. I understand that there are

some companies that have approached this, and they've said we're just going to replace everybody this way. And they tell all of their people that and then they say, now help us make it happen. It's a really bad way to do things.

Lesson 11: Use Secure Information Links or Redundant Lines to Mitigate Infrastructure Risks

Early articles on offshore outsourcing focused on poor infrastructure quality in low-cost countries as a major risk factor. Our participants reported only minor problems — mostly with teleconferencing capabilities — because, at least in India, the infrastructure has improved. First, many clients, such as Financial Services 3, use secure communications links between the customer and offshore supplier to enable easy and secure access. Second, many US customers opt for redundant lines so that downtime is not an issue. Third, the Indian government has replaced the telecommunications monopoly with competition. According to the former president of MCI, India is in the process of laying fiber-optic cables in 100,000 Indian buildings — as compared with 30,000 buildings wired in the US. He further noted that a telecommunications company in India set a sales record by signing up 110,000 cell phone customers in a single day. All of these initiatives will serve to increase telecommunications service quality and reduce costs.

The more common problem for US customers is mobilizing inhouse resources to create the infrastructure, such as setting up a virtual private network (VPN), cubicles, computers, access cards, login IDs, and access to systems. There is some level of managerial disconnect between the US project managers and their systems administrators. PMOs can help bridge the gap.

Lesson 12: Use Fixed-Price Contracts When Possible to Mitigate Workforce Risks

Several participants complained that some of the suppliers' employees were inexperienced and overworked, and employee turnover was frequent. As one Biotech participant noted, "CMM certification is no substitute for experience." The customer is most affected by workforce risks when using a time-and-materials contract. Because the customer is billed hourly, the customer subsidizes a new supplier employee's learning curve. Also, supplier employees who are unproductive take more hours to complete tasks, which, again, is reflected in the customer's bill. Some customers try to mitigate this risk by demanding to see résumés of supplier employees or by setting minimum years of experience. These practices place the customer in the business of managing the supplier's resources, which can increase transaction costs and create animosity between customer and supplier. A better practice is to encourage

the supplier by using a fixed-price contract with clearly defined deliverables. The supplier can best decide how to staff the project to meet its contractual obligations while maximizing its own profit margin. The supplier is incented to put its most productive people on the project to increase its margin, or the supplier may make a strategic decision to finance its own employees' learning curves. Let's now turn to a discussion of the practices to mitigate social and logistical risks.

PRACTICES TO WORK EFFECTIVELY WITH OFFSHORE SUPPLIERS

Managing remote teams with project members from different countries, cultures, and time-zones who speak different languages is one of the most difficult challenges of offshoring. Fortunately, there are many practices that can help customers work effectively with offshore suppliers.

Lesson 13: Design Effective Organizational Interfaces

Our research has uncovered three models of organizational interfaces, each with its own set of benefits and costs. As shown in Figure 3, both Retail and Manufacturer 1 use the funnel design, which provides the greatest constriction of the communication pathways between the customer and its supplier. Since communication from local business units and technical staff is funneled through the project managers and then to the on-site engagement manager, this model places great importance on the vendor's selection for an on-site engagement manager. This reliance on a specific individual does pose risk to both parties. Retail, for example, experienced a major failure with a large Indian
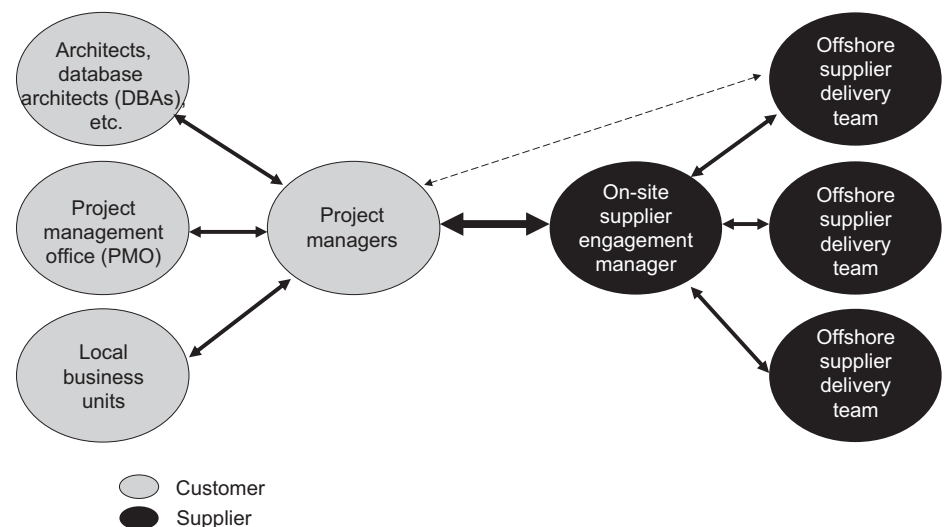

Figure 3 — The funnel design.

firm because the engagement manager originally chosen to lead the engagement didn't have the skills or experience to work with a *Fortune* 100 company. Once the shortcomings were brought to the attention of the vendor, action was quickly taken, and a more senior engagement manager was put in place. Time and confidence in the vendor, however, had already been lost.

Despite the risks associated with this model, the benefits include better control over the engagement and a single point of contact that will help mitigate the cultural, time zone–related, and communication risks. This model also requires the engagement to be large enough to warrant a dedicated on-site employee from the vendor.

In Figure 4, the network design offers additional pathways of communication between the vendor and the supplier. The network design, used by Biotech, shows communication taking place between all stakeholders at both the vendor and the supplier. Particularly interesting is the direct link between local business units and the supplier. This linkage offered mixed results for Biotech. One project that allowed local business units to communicate directly with the supplier to define requirements was successful. In this case, the local business unit was very low on the priority list of the internal IT staff and felt neglected. Once connected with

the offshore delivery team, its needs were assessed, requirements gathered, and the project proceeded with a greater focus on the user. This project came in on time and under budget and with high customer satisfaction numbers for the offshore vendor.

One project nearly failed due to this linkage. The postmortem showed that when the local business unit (whose needs are often boundless) was allowed to communicate directly with the supplier (whose promises of delivery are often boundless), scope, feature, and budget creep proceeded unchecked. While the project was completed, it was constantly delayed and finished well over budget.

The third model, which we call the mirrored design, was actually studied and documented by Kaiser and Hawk[14] (see Figure 5). They reported on an eight-year relationship between a US financial insurance company and an India-based supplier that evolved from outsourcing to cosourcing. (Cosourcing describes a close vendor/customer relationship in which the vendor augments or even replaces the customer's IT competencies. The supplier even serves as team leader for some types of work.) To effectively manage the supplier's increased responsibility, the two partners realized they needed multiple levels of formalized communication. They designed the dual project management hierarchy, or the

mirrored design. This model has a significant onshore supplier presence, including the supplier's systems analysts on the development staff. This increases costs compared with the previous two models, but is warranted by the higher value work provided by the vendor.

Addressing CMM Challenges

Lessons 14 to 16 address the process gap between US customers and their offshore suppliers. Every interview participant raised the need to coordinate work processes, particularly with suppliers who are committed to the Software Engineering Institute's CMM. While Indian suppliers were all certified at CMM Level 4 or 5, US customers were usually lower. At higher levels of certification, an immense amount of documentation is required. US project managers had never before been through such a rigorous requirements definition process.

At Biotech, for example, requirements definition is an informal process when done onshore. Project managers speak frequently with users, who are usually located on campus headquarters. The user feedback cycle is quick. In contrast, project managers working on the offshore pilots had to engage in many formal and planned communications with suppliers and users to create the required documents. As one Biotech global team member said, "The overhead costs of

documenting some of the projects exceeded the value of the deliverables."

So what can be done to more effectively coordinate work with the supplier's CMM processes? The following practices were used by participants.

Lesson 14: Elevate Your Own Organization's CMM Certification to Close the Process Gap Between You and Your Supplier

Participants suggested that the best way to extract value from the supplier's CMM processes is to become CMM-certified yourself. According to the director of application development at Transportation: "A real problem we had was our CMM Level 1.5 guys talking to the vendor's Level 5 guys. So together, we have worked out a plan with our vendor to help bring our CMM levels up. When we do, it will be a benefit to both of us; our specifications will be better, and so they can use them more efficiently."

The outstanding issue is the level of certification required to effectively work with suppliers. The VP at Financial Services 4 believes that customers need to reach only Level 1.8 to extract value. The officer of IT services at Financial Services 3 set a more ambitious goal in pushing to bring his own organization up to at least a Level 3. Still other US organizations seek higher certification levels, as the US federal government now requires for all government IT contracts.
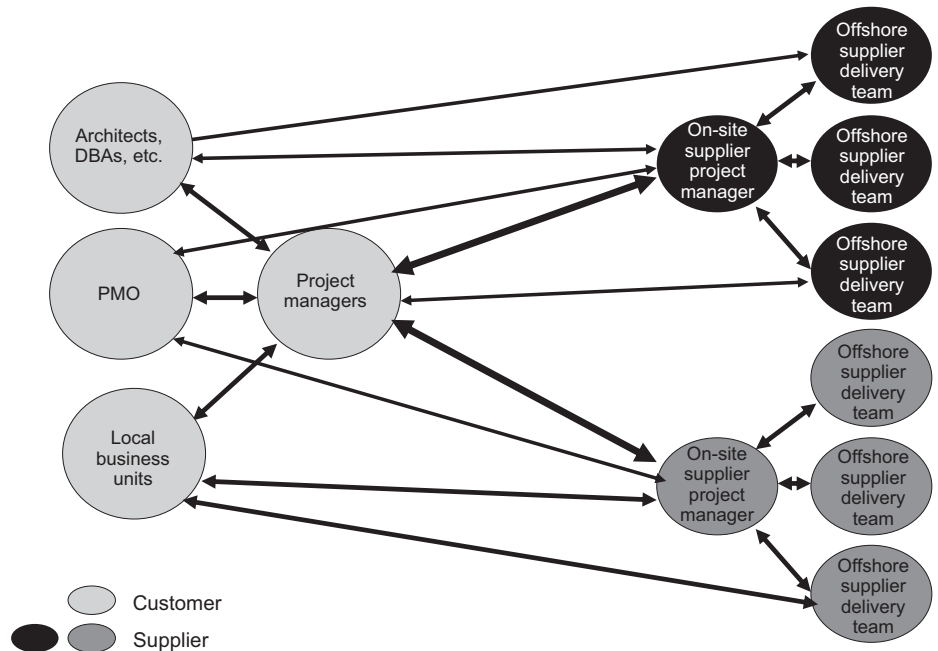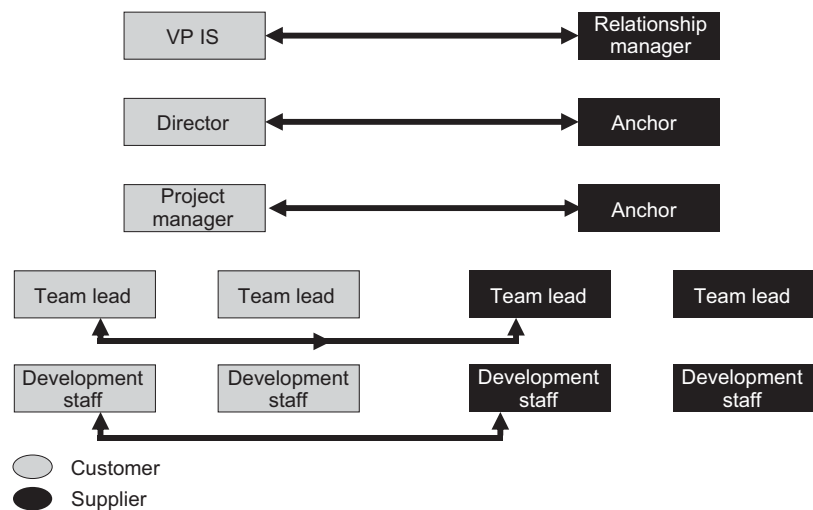

Figure 4 — The network design.

Figure 5 — The mirrored design.

Lesson 15: Bring in a CMM Expert with No Domain Expertise to Flush Out Ambiguities in Requirements

US customers often complain that the requirements process is long and requires a great deal of expensive iteration. This is usually because the US customer doesn't understand how the supplier will interpret the requirements. Some US customers, for example, were surprised that supplier team members did not understand the concept of a mortgage. In another instance, US customers were surprised that the suppliers did not allow female name fields in the

software to be altered unless recently married (as is the rule in India). To reduce the cycles during the requirements definition stage caused by misinterpretations, one Indian supplier sought a unique solution. He brings in a CMM Level 5 expert to the client site who purposefully has no domain knowledge. This enables him to identify ambiguities in the requirements documents that the offshore delivery team will likely confront, thus reducing the number of iterations.

Lesson 16: Negotiate The CMM Documents for Which You Will and Will Not Pay

The project manager at Financial Services 1 noted, "You ask for one button to be moved, and the supplier has to first do a 20-page impact analysis; we are paying for all this documentation we don't need." This manager is negotiating for exactly which documents Financial Services 1 will and will not pay. This enables him to use only the CMM processes he believes add significant value. While this practice is unique, a customized interface with each customer could serve to increase the supplier's costs, which may eventually result in higher prices.

Lesson 17: Tactfully Cross-Examine, or Even Replace, the Supplier's Employees to Overcome Cultural Communication Barriers

Many interview participants said that Indian employees would not challenge the customer even if they believe that the customer

was making a mistake. Indian employees will not readily deliver bad news and won't express incomprehension. According to one frustrated participant, "The place could be on fire, and they would say, 'Oh it's great — a little warm — but it is great!'"

While being anxious to satisfy a customer is certainly a sought-after supplier quality, it can actually be detrimental to effective communication. Biotech's global leadership team member offers the following anecdote:

> You can sometimes be talking with someone, and across the table they'll be nodding their head as if they understand and agree with everything you're saying. You find out later that they didn't understand what you were talking about. That's one of the interesting things to learn. Apparently the culture does not challenge, so there is a "The customer is always right" sort of a feel to it. So you have to learn, when you're in the dialogue, to ask the questions that ensure that understanding is happening.

One American who works for a major offshore supplier says he learned to cross-examine his Indian counterparts to ensure that they tell him bad news. Whereas in America he asks, "How is the project going?" in India he asks much more targeted questions, to the point where he worries about being rude. Another participant solved the issue by complaining to the supplier's

senior management that the supplier's project manager was evasive about the project status. The supplier replaced that individual with a woman who was much more forthcoming. Lesson 18 provides another strategy to address this issue.

Lesson 18: Require Supplier to Submit Daily Status Reports

At a US Midwestern regional bank, for example, the customer was getting increasingly frustrated with the supplier's inability to flag problems or report delays in the weekly conference calls. The project manager for the bank designed a status report that would take the offshore team members only a few minutes each day to complete. Initially, the supplier employees agreed, but ultimately the project manager could not get them to comply. After several iterations with the supplier's management team, the manager discovered that the supplier's delivery team did not understand how to fill in the report and was afraid to ask. Once the instructions were clear, the delivery team members accurately completed the daily status reports, which now serve as the major tool to identify and solve problems. Manufacturer 2 had an almost identical story — supplier team members did not verbally report bad news in weekly conference calls, but rather reported items on a daily online status report. This level of micromanagement sometimes serves to frustrate US customers.

But at the same time, it was the only tool these two customers found to overcome cultural communication barriers.

Lesson 19: Let the Project Team Members Meet Face-to-Face to Foster Camaraderie

One project manager at Financial Services 1 said he regretted never being allowed to visit India. He felt he would have been a much more effective project manager had he met the people face-to-face to get a better understanding of their work practices. The need for the customer's project manager to visit the supplier site is clearly emerging as a best, albeit expensive, practice to get past cultural communication barriers. It is much easier to switch to lower-cost media such as teleconferences and e-mail after people meet face-to-face. Biotech bore the cost of the team members meeting face-to-face. A global leadership team member noted: "Once you get good at specking out what you need face-to-face, then an awful lot of the work happens by e-mail, and then it's just followup questions. And lots of that happens by e-mail."

While this lesson carries considerable expense (a round-trip coach ticket to Bangalore costs approximately $2,000, and a business-class ticket is $6,500), the benefits are clear and immediate. After his first trip to see the vendor's offshore delivery team, the manager of Manufacturer 1's software center of excellence reported:

I can't believe I waited two years to meet the people I have been only e-mailing and seeing in videoconferences! What a difference this trip has made. Now I know my team. I should have done this at the very beginning. I now have faces, and more importantly personalities, to go with names and titles. This trip was worth every penny.

Lesson 20: Consider Innovative Techniques, Such as Real-Time Dashboards, to Improve Workflow Verification, Synchronization, and Management

Project managers noted difficulties with transferring work, with keeping track of programming and database versions, and with when and how to verify supplier work. At Biotech, most pilot projects required the transfer of work every two weeks. At Financial Services 1, the customer takes possession of programming code every 15 days but needs to check the database architecture daily. Sometimes database schemas have discrepancies. A possible solution is a real-time dashboard. Dashboards are emerging tools that allow the customer to glimpse the supplier's work in real time. Although only one of our participants (Manufacturer 1) has implemented a dashboard, all interviewees saw a need for better workflow management. This dashboard allows for real-time governance of the engagement, with all projects color-coded based on current status.

Lesson 21: Manage Bottlenecks to Relieve the Substantial Time-Zone Differences

Time-zone differences are often marketed as a bonus of offshoring because operations can occur around the clock. While that may be true of call centers, time-zone differences do not typically facilitate IT development projects. For concurrent tasks, like telephone conferences, US developers have to stay at work very late or the supplier has to get up very early. For sequential tasks, if US developers don't stay late to complete deliverables, the consequence is that the supplier sits idle for an entire day. For example, the project manager at Financial Services 1 said he doesn't have the power to make the database administrator stay late to finish schemas, resulting in a bottleneck as the supplier waits. At Biotech, the project managers' number one complaint about offshoring was its effect on their work hours. While Biotech's global leadership team has the power to enforce irregular hours within the IT department, it is more difficult to get business-unit managers and end users to cooperate. Biotech learned that a best practice to minimize bottlenecks was colocated people: have some Indian supplier employees on-site in the US and some Biotech staff on-site in India. As mentioned previously, S2Tech minimized the problem by setting the work hours in India from 1:00 pm to 10:00 pm to provide a three-hour overlap with US customers. Other practices

include flex time for US employees working on offshore projects, even if it breaks formal company policy. Giving US employees Indian holidays off to compensate for longer hours was also effective.

PRACTICES TO ENSURE COST SAVINGS WHILE PROTECTING QUALITY

While participants did not expect to lose money during the pilot-testing phase, the main objective was testing the proof of concept. Substantial cost savings can be achieved only after employee learning has accumulated and the size of the projects increases. In this section, we discuss what participants learned about the necessary size of projects and QA practices to ensure cost savings while protecting quality.

Lesson 22: Consider Both Transaction and Production Costs to Realistically Calculate Overall Savings

For US companies, the initial offshore driver is undoubtedly labor cost savings, a production cost. Although we know that in the US average labor cost per year per IT employee is $63,331, compared with less than $12,000 in India, total production costs can be difficult to assess. For example, Biotech estimates projects based on an eight-hour workday but the Indian offshore suppliers bill nine and half hours per day. The management challenge is extracting overall cost savings when both transaction and production costs

are considered. Transaction costs are considerably higher with offshoring.

Most CIOs find it difficult to calculate the transaction costs of offshoring. As the Biotech head of the offshore PMO said:

> It is clear that we saved money on a per-hour basis; there is no way to argue about that. But did they [the offshore provider] save us money? Did they do it as fast as we would do it? The other big complaint came from the project managers, [who said,], "Managing offshore projects is really hard. … If I had to count up how hard this is, then we lost money."

Lesson 23: Size Projects Large Enough to Receive Total Cost Savings

Our research did not identify a definitive benchmark for the size of IT project required to achieve significant savings. We asked a senior researcher at a consulting firm how big an IT software project has to be in order to achieve 15%-20% in overall savings. He quoted us between 80 and 100 full-time equivalents, although he admonished that this number was based on his personal experience. Participants from Biotech agree that larger-sized projects are the key to getting overall cost savings. The head of Biotech's offshore PMO, said: "We tended to pick what we perceived as low-risk projects for the pilots. And in some cases, that meant that we picked projects that were so

small, the overhead crushed any value." After pilot tests were complete, Biotech launched two very large application development projects. These projects will be two to three years in duration and represent more than $1 million each in IT spend, with significant cost savings anticipated.

Lesson 24: Establish the Ideal Inhouse/On-Site/Offshore Ratio Only after the Relationship Has Stabilized

The CEO of an offshore intermediary firm stated that the ideal ratio is 15% of client staff on-site to maintain direction, 15% supplier staff on-site to serve as liaisons and project managers, and 70% of the supplier staff offshore. While customers are in the experimental phase, the ratio is likely to be much higher. For example, when Financial Services 3 started offshoring in 2001, the onshore/offshore ratio was 50/50. The supplier Wipro has a dedicated staff on-site, as well as a dedicated offshore delivery team. Thus far, the relationship has been successful in that Wipro delivered 115 projects with an above-average customer rating. As Financial Services 3 has conquered the learning curve and established a good supplier relationship, the officer of IT services aims to shift the ratio to 30/70.

In other cases, the customer and supplier relationships have stabilized to such a point that the supplier has no permanent staff on the customer premises. For

example, for some of the projects at Retail and Manufacturer 2, no on-site supplier presence is needed because the team members know the context and one another very well.

Lesson 25: Give Offshore Suppliers Domain-Specific Training to Protect Quality and Lower Development Costs

When Manufacturer 1 began to engage its Indian vendor, it realized that the need to carefully manage and direct the knowledge-transfer processes was significant. The vendor did not initially have the domain expertise in the design and maintenance of embedded software, which differs substantially from traditional software development. To bridge this gap, Manufacturer 1 decided to give the vendor's delivery team the same new employee orientation sessions and training that is provided to new internal employees. The content of this training included tools, methodologies, and technologies used at Manufacturer 1, as well as more traditional orientation activities such as facility tours, introductions to peripheral departments, and human resources issues. The technology and project training, which was conducted by the lead architects and project managers, dramatically increases Manufacturer 1's transactions costs. However, they hope to significantly reduce these costs as the trained vendor employees move offshore and transfer the knowledge to the offshore teams.

Lesson 26: Overlap Onshore Presence to Facilitate Supplier-to-Supplier Training

This lesson is closely tied to the need to provide the vendor with domain-specific training. Since the overall goal of training the vendor's staff is to ultimately protect quality and reduce cost, Manufacturer 1 staged the training so the vendor's on-site project managers would overlap on-site for three to six months to facilitate the knowledge transfer prior to the original project manager moving offshore to train the delivery team. This overlap and ultimate transfer to offshore allows the vendor to center the delivery effort offshore where rates are typically less than half of the onshore rates.

In addition to improving the transfer of knowledge, the overlap of the on-site project managers also facilitates the transfer of the relationship. Both Manufacturer 1 and its vendor mentioned that this overlap helps to maintain the continuity of the engagement. According to the engagement manager:

> The overlap allows us to help ease the transition. We can share the stories and the history at a personal level. For example, there are "inside jokes" that only the delivery teams would understand. We can transfer that "soft knowledge" along with technical lessons learned about the creation of embedded software.

Lesson 27: Develop Meaningful Career Paths for Subject Matter Experts, Project Managers, Governance Experts, and Technical Experts to Help Ensure Quality

Participants stressed the need for subject matter experts (SMEs) and good project managers to define and deliver business requirements and governance experts to manage external suppliers. But as US organizations increasingly outsource entry-level positions such as programming, how will future generations of SMEs, project managers, and governance experts be groomed?

A global leadership team member at Biotech said, "All of the best project managers I have ever worked with all started as coders. If all the hard-core coding is being done offshore, where will we get our good project managers?"

At Manufacturer 2, the CIO hopes to swiftly groom future project managers by putting all inhouse IT staff through project management training, even for low-level graphics designers. The vice president of technologies for Financial Services 6 addressed this worry by partnering with local universities to create "centers of excellence." The centers' mission is to develop skill sets aimed at "priming the pump" to ensure the talent pipeline does not dry up. These centers work with Financial Services 6 to understand the changing landscape of IT work and adapt their curriculum to create graduates with the

necessary combination of business, project management, and technical skills.

CIOs looking for an in-depth answer to career paths of the residual IT staff may refer to the core IS capabilities model developed by Feeny and Willcocks.[15] Feeny and Willcocks defined nine capabilities surrounding the elicitation and delivery of business requirements, managing external supply, and ensuring technical ability. Global firms such as DuPont and Commonwealth Bank Group have adopted the model.

Lesson 28: Create Balanced Scorecard Metrics

All participants identified the need for measures that consider costs, quality, timeliness, and risks, but only participants from one company were fully satisfied with current assessment measures. Manufacturer 1 tracks inhouse, domestic, and offshore suppliers' costs, quality, and productivity using a standardized activity measure. The data is captured by an inhouse dashboard and analyzed monthly by management to monitor real development costs and trends. It learned that real savings from offshore do not occur until after they have invested significant up-front training of every offshore developer and team leader. They also share this data with vendors so that all parties understand the total cost trends.

In contrast, at Biotech, offshore measures are still in the formative stage. Traditionally, Biotech's IT managers conduct subjective audits on the back end of a system implementation. Critical feedback from the customers and the sponsoring strategic business unit is deemed the most important assessment factor. As the CIO notes, "IT cannot make this assessment alone, it has to be done with the sponsoring and user group." The head of the offshore PMO is developing more quantitative metrics, but the effort is not complete.

Some participants are pressuring suppliers to develop a set of metrics to serve as industry benchmarks. One participant said: "Our vendor must have many customers who are all trying to do the same thing. And maybe some have already done it. If they could just come up with five to seven key measurements to help me, I could better manage the project and explain the process to my boss. But every time I ask for best-of-breed metrics, they tell me, 'Metrics really need to be company-specific and business driven, not vendor provided.' That does not help me!"

CONCLUSION

Most US CIOs are veterans of domestic outsourcing. While they may have initially ventured offshore primarily to seek lower costs on short-term projects, they stay for the quality. Many CIOs will eventually escalate global sourcing to enable strategic business objectives such as bringing products to market faster and cheaper, financing new product development, accessing new markets, or creating new business.

In this report, we presented 28 practices to help CIOs accelerate the learning curve. Many of these practices require CIOs to equip their project managers with the things they need to be successful, such as PMOs, CMM training, offshore site visits, and techniques to monitor the supplier's work. To help prevent internal panic among IT employees, CIOs must openly communicate the objectives of an offshore initiative to assuage irrational fears. CIOs also must rally support from stakeholders outside of IT such as business-unit managers and end users to prevent bottlenecks, scope creep, and poor quality. We also believe that CIOs have a social responsibility to actively manage society's perceptions of offshore sourcing.

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APPENDIX A: RESEARCH PARTICIPANTS

While several companies have been mentioned and quoted from throughout the report, Appendix A/Table 1 provides a complete list and description of all the participants.

APPENDIX B: CASE STUDIES

Our research included interviews with 14 US firms that are actively engaged in leveraging offshore models. While such a broad research base is essential to the applicability of the 28 lessons, delving deeper into the journey of four of these firms (Biotech, Retail, Manufacturer 1, and Manufacturer 2) will enable CIOs to see perspectives, lessons, and strategies from four different organizations with very divergent stories.

Biotech

Biotech is a *Fortune* 500 company and a leading provider of biotechnology-based products. Over the past four years, Biotech has experienced moderate growth in revenues, earning billions of dollars a year in sales but generating significant net losses in 2002. That year, the company reduced the IT budget by 5% partly to subsidize the net losses from 2002. Doing more with less became the CIO's major challenge. A few members of the global leadership team, who report to the CIO, championed the investigation of offshoring. The number one objective was to reduce IT costs by replacing some of the expensive domestic contract labor force with cheaper offshore equivalents.

Three members of the global leadership team began their offshore investigation by visiting US customers onshore. Persuaded by the cost savings they observed, they hired an intermediary to serve as a guide to India and to Indian suppliers. They selected India as the offshore venue because Biotech already had R&D facilities in Bangalore. In that facility, Biotech had full-time IT employees who ultimately played a significant role in managing offshore outsourcing.

Upon returning from India, the global leadership team began to rally senior management support for offshore outsourcing. The CIO approved and created a new offshore PMO. The role of the office is to transfer knowledge about offshore contracting, negotiations, and management.

Members of the global leadership team started bringing pilot projects to the offshore PMO. The idea was not to generate cost savings immediately, but rather to gain experience with the types of applications, suppliers, contracts, and work processes that are needed to ensure offshore outsourcing success. In all, 17 pilot projects were undertaken with four different Indian suppliers. They purposefully selected very different types of applications including replatforming from

PeopleSoft to SAP, back-end systems development, and end-to-end systems. They purposefully selected new (wireless) and old (ERP) technologies. They purposefully selected different-sized projects ranging from a 20-person-per-day project to an 800-person-per-day project (four full-time equivalents for eight months). They purposefully selected two large Indian suppliers and two small Indian suppliers to compare vendor capabilities. In several instances, Biotech gave small pieces of the same project to two vendors so that the project served as a control group for better supplier comparison.

The offshore PMO negotiated master service-level agreements (SLAs) with the four Indian suppliers. Statements of work (SOWs) were appended for each specific pilot. Two types of financial arrangements were used for the pilot projects: time and materials and fixed price, although the time-and-materials contract has been more prevalent. Fixed-price contracts were only used for clearly defined SOWs.

The offshore PMO also had to address major security concerns. Since 9/11, Biotech created the position of information security officer. For the security officer, one of the concerns in offshore outsourcing was data security. To minimize the risk, Biotech required the supplier's IT staff in Bangalore to use Biotech's secure R&D facilities for sensitive data

Appendix A/Table 1 — Research Participants

Organization Pseudonym (n=30)	Number of Participants Interviewed (n=101)	Representative Titles of Participants
Customers		
Aerospace	3	Vice president; system development managers
Biotech (*Fortune* 500)	7	Head of offshore program management; global leadership team members
Financial Services 1 (*Fortune* 100)	4	CTO; project manager
Financial Services 2	1	Vendor assistance manager
Financial Services 3	1	Office of IT services
Financial Services 4 (*Fortune* 100)	1	Vice president
Financial Services 5	1	Vice president, global delivery
Financial Services 6	1	Vice president of technologies
Financial Services 7	1	Program manager
Financial Services 8	1	CEO
Manufacturer 1	3	Manager, software center of excellence; program manager
Manufacturer 2	3	Program management office head; project managers
Retail	7	CIO; director of contract management; senior development director
Transportation	1	Director of outsourcing
Service Providers		
Large Indian Supplier 1	16	Senior vice president (retail); vice president (outsourcing solutions); associate vice president, software development center; HR officer; general manager
Large Indian Supplier 2	11	Vice president (retail); general manager (quality); practice head
Large Global Supplier 1	11	CEO of India operations; partner; vice president of business engineering; HR director
Large Global Supplier 2	7	Deputy general manager; head of corporate quality; principal consultant
Large Global Supplier 3	1	Manager of products
Small Indian Supplier 1	3	CEO, HR executive
Small Indian Supplier 2	4	Managing director; vice president (quality)
Third Parties		
Intermediary Consulting Firm 1	1	CEO
Intermediary Consulting Firm 2	3	CEO; vice president
7 Legal Firms	9	Lawyers; partners

access and updates. Although this arrangement met Biotech's security needs, the supplier's IT staff did not like commuting across town to Biotech's facility. (Apparently the trek is like a Manhattan resident commuting to Queens.)

Seventeen pilots were launched in 2003. The learning curve with the offshore suppliers was significant. The top challenges identified: working with the supplier's capability CMM processes, time-zone differences, language differences, and cultural differences, in

particular the supplier's reticence to report bad news. The head of the offshore PMO described the problem this way:

> An iteration was due on Monday. On Friday, the guy [the Indian project manager] says, "It's fine. A little bit of a stretch, but it is fine." And on Tuesday, he's asking for another two weeks! So they missed it by 100%. They didn't feel like they could tell us if they were going to miss it. This seems to be the modus operandi: dig and dig and spade and spade to get anybody to tell you that things are wrong. Because they just simply won't. They will tell you it is great.

Overall, the 17 pilot projects were successful in that Biotech extracted the learning it wanted and demonstrated proof of concept. By accumulating all of the learning from the pilot projects, Biotech's IT management learned which two suppliers it preferred (one large and one small supplier), the types of processes Biotech needed to develop inhouse to facilitate offshore outsourcing, and the types and size of projects best handled offshore. In September 2003, Biotech was ready to move from offshore experimenter to proactive cost focus.

During the second phase of offshoring, Biotech aims to ensure significant cost savings. While the pilot projects experienced lower hourly wages, overall cost savings were not evident because of the

learning curve and risk-mitigation practices, such as small project sizes. In order to truly leverage offshore savings, Biotech is embarking on larger projects, such as a multiyear, multimillion-dollar development project with the large Indian supplier.

Retail

Retail is a *Fortune* 100, US-based retailer with more than 1,000 stores in North America that employs more than 125,000 people. As with many large US companies, Retail began looking offshore in preparation for the Y2K crisis. With six million lines of COBOL, it knew additional manpower was needed to tackle the problem. In 1997, without any formal request for proposal (RFP) process, it selected one of the large Indian suppliers to work on small, well-contained applications in its major credit purchase management system. Retail took advantage of its considerable experience with domestic contractors and, following a staff augmentation model, simply added the Indian supplier to its list of more than 35 domestic contractors.

This addition of the Indian supplier to its portfolio of domestic suppliers allowed Retail to analyze the value proposition of all vendors simultaneously. One major lesson learned by Retail was the financial benefit in creating an integrated PMO. According to the director of the PMO, most of the 35 domestic contractors

responded immediately to the inclusion of offshore vendors by reducing the rates of commodity-type coding by up to 50%.

The initial projects with the Indian supplier progressed well, and the director of the PMO visited India and the supplier in late 1997. Based on the success Retail had with the first pilot projects, the engagement steadily grew during the late 1990s. This expansion was done on a project-by-project basis, with additional work being appended to the master SLA created in 1997. Since 1997, Retail has steadily increased its offshore outsourcing activities.

Retail's offshore challenges have centered on the vendor's inabilities to effectively work with very large US firms. On two occasions, the size and complexity of Retail's operations created obstacles for the Indian firms. In the first occasion, a large vendor had selected an inexperienced engagement manager to interface with Retail's project managers. The CIO of Retail attributes this challenge to the rapid growth of the Indian vendors:

> They [the vendors] only have so many A-team members. They tried to send us a B-team engagement manager. Almost immediately, we realized that they expected the engagement manager to learn how to work with a *Fortune* 100 firm during our engagement! Well, after two or three mistakes, we told the vendor to fix the problem. To the vendor's credit, they

replaced him almost immediately, but we lost some time and had to mediate with the business units.

On the second occasion, a small Indian firm overpromised and underdelivered throughout the engagement. According to the vice president and director of corporate systems: "They were so anxious to engage with a *Fortune* 100 firm, they consistently oversold their capabilities and were unable to meet the SLAs and quality standards. Eventually, we forced them to remediate at their cost, and we just discontinued any future work with them."

Currently, about 2% of its $200 million annual IS budget is outsourced to offshore providers. The vast majority of this work has been awarded to one large Indian supplier. However, recent initiatives by the current CIO and his management team have begun to diversify its offshore supplier portfolio. According to the vice president and director of corporate systems, Retail has been actively expanding its engagements with other firms. "Don't get me wrong," the VP said. "I've been extremely happy with [the large Indian supplier]. Every project they have done has been basically on time and on budget, and their quality is good. I just think we need to use competition to keep the vendors honest and keep rates competitive."

Retail is currently engaged with two of the top five Indian providers and two Tier 2 vendors.

It has also formalized the RFP process to more accurately compare the responding vendors.

Retail estimates that the percentage of work performed by offshore vendors will increase over the next few years as the amount of work done by internal staff and domestic contractors decreases.

Retail plans the decrease in internal staff to take place gradually and through natural attrition, as shown in Appendix B/Table 1.

As Retail's engagements with offshore vendors continue to mature, it remains committed to outsourcing only noncore activities. It has no plans to move beyond a staff-augmentation model and will perform all application development inhouse and continue to outsource primarily system maintenance. The staff-augmentation model offers many advantages to Retail. It maintains the company's strong control of management and applications development, and it offers the easiest exit strategy and provides a stable level of offshore resources. It also allows for

a quick ramp up and down of available resources based on current needs.

Manufacturer 1

Manufacturer 1 is a *Fortune* 100 global manufacturer of industrial equipment with more than 75,000 employees in more than 20 countries. It has successfully transferred its Six Sigma manufacturing methodologies and experiences into the management of offshore activities. Of all the firms we have studied, Manufacturer 1 shows the greatest level of expertise in metrics, human resources management, and governance. The experiences within a software center of excellence (SCE) within Manufacturer 1 are prime examples of this proficiency.

Manufacturer 1 is currently on its second attempt to engage offshore vendors. In the first attempt, it underestimated the knowledge-transfer challenges. During this initial period, the majority of the projects failed to deliver at acceptable levels of quality and cost. Manufacturer 1 used the lessons learned to better structure

Appendix B/Table 1 — Retail's Plans for Internal Staff Versus Contractors Through 2007

	2004	2005	2006	2007
Internal Staff	71%	70%	65%	59%
Domestic Contractors	10%	5%	3%	3%
Offshore Contractors	19%	25%	32%	38%

and detail the projects currently underway. According to the manager of the SCE:

> During our first try, we followed a "throw it over the ocean" model. We thought we could just send the vendor our specifications and good code would come back. We were very wrong. They didn't understand embedded software or the equipment we manufacture. They didn't even know what our product looked like! Now we are spending considerable time on domain knowledge transfer and training.

The manager of the SCE, which employs about 150 people and does about $35 million per year in development work, has now actively used offshore outsourcing to reduce some of the burden placed on his staff. For example, recent changes to the Environmental Protection Agency's regulations of emissions of diesel engines have forced the industry to redesign many of the standards and controls for those engines. According to the manager of the SCE, the new regulations created a significant backlog of new development and modifications to existing applications:

> You're either going to get these done, or you're not going to sell diesel engines; you're going to go out of business. And they're very challenging. Well, in the management of that program, we were going to do whatever it takes; we were going to deliver this product even if it

killed all of us, and we were all dead lying on the floor when it was over. And that's what we did. And so we were riding people hard to get the software and stuff done to be able to deliver that. And the only option that we had was, "Well, you're going to work harder until we're done." And so the software group that we have, for the most part, was ridden hard to deliver, and the only way that we can unload them is to have resources. We were not going to add a bunch of expensive North American resources. We've got to find other ways of being able to add flexibility because the other thing we don't want to do is we don't want to hire a bunch of people, have a downturn, and lay a bunch of people off. Culturally we just don't like doing that.

Manufacturer 1 is also aware of the cultural implications of using an offshore vendor for staff augmentation and has factored that into its human resources practices. Using a custom-designed decision support system, it monitors how many offshore resources are currently being used as well as future project estimations. This provides the inputs for future hiring decisions, and it can estimate how many project managers, architects, and project leaders it needs based on how many offshore resources are being utilized. That helps to determine how many entry-level programmers they need to hire to begin the process of training more advanced roles.

While technically using a staff augmentation model, Manufacturer 1 refers to its outsourcing as "out-tasking." Approximately half of its outsourcing work consists of small "activities" which are appended to the master SLA. By cutting up larger tasks into five to seven workday sections, it can monitor cost, quality, and project schedules closely. This model also helps Manufacturer 1 to protect its highly sensitive intellectual property. The SCE is primarily tasked with the creation of embedded systems for use on the industrial equipment. These systems not only have proprietary computer code but also have critical data for the operation of the equipment itself. By segmenting the outsourced work into such small sections, Manufacturer 1 feels it can outsource critical tasks without revealing its intellectual property.

Currently, Manufacturer 1 is working with two Indian vendors: one large and one boutique. It has approximately 50 offshore vendor resources (35 on-site, 15 offshore) working with its 150 internal staff members. While this 3-to-1 ratio is higher than Manufacturer 1 would prefer, it is poised to greatly reduce the number of onshore vendor resources. After an extensive knowledge-transfer movement, Manufacturer 1 is hoping to greatly reduce its costs by having its vendors move their on-site resources offshore, thus lowering the billable rate. The innovative

knowledge-transfer procedure involved "indoctrination" of the vendor's employees into Manufacturer 1's culture, processes, applications, systems development lifecycle, and development tools. During this process, all new employees (both external vendors and internal employees) are given identical training. Once trained by Manufacturer 1 onshore, the vendors' employees train their colleagues and eventually move offshore to train the offshore development team.

Manufacturer 2

Manufacturer 2 is a US-based global manufacturer with 24 plants located worldwide; it employs more than 12,000 people. The company, which grew through mergers and acquisitions, has six major strategic business units. In 2001, a senior VP at corporate headquarters was seeking to efficiently replatform the six separate ERP packages in the strategic business units into a unified ERP system. After pricing the large, US-based accounting firms, he championed the offshore journey in 2001 seeking lower rates. The senior VP hired an intermediary offshore consulting firm to serve as a guide to India and the Indian suppliers. He made the trips to India and selected three offshore firms. After due diligence, the list pared down to one large Indian supplier for the ERP project and one small Indian supplier for smaller, discrete IT projects.

Manufacturer 2 established VPNs with the two suppliers to ensure data security. Although generally happy with infrastructure, the quality of the conference calls capability is still poor.

Manufacturer 2 experienced the same startup challenges as our other cases. The weekly conference calls were not an adequate method for project status reporting because the Indian suppliers would not willingly deliver bad news about project delays. Manufacturer 2 then required the Indian suppliers to fill in daily status reports. This way, the customer was better able to track supplier work and to identify problems and delays. According to the director of applications, the supplier employees were more comfortable reporting problem using the reports than the weekly conference calls.

Another issue was the lack of inhouse project management capability. With the required CMM processes, the inhouse project managers needed more training on formal development processes. They started putting all the internal IT staff through project management training, even low-level graphics designers. The idea is not only to groom more project managers responsible for needs analysis but also to increasingly move low-level IT jobs offshore to the cheaper suppliers, leaving more value-added project management work inhouse.

Manufacturer 2 does two main assessment measures. For cost, it tracks actual time spent and hourly rates and compares that with onshore rates. For quality, it hires an outside consulting firm to do audits and code reviews, which have generally been of excellent quality.

After three years and 30 projects, offshore outsourcing has become institutionalized within the company. The offshore resources have evolved into a natural an extension of the inhouse development team. For smaller projects given to the small Indian supplier, supplier managers no longer stay on-site at Manufacturer 2 because all the team members already know each other and have worked closely together before.

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Senior Consultant Team

Each of the individuals on the Cutter Consortium Sourcing and Vendor Relationships team is an expert in outsourcing, offering the expertise that comes from decades of hands-on, real-world experience. The team includes:

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