

Global Sourcing and Value Chain Unbundling

Ling Ge
Ph.D. Candidate
Ling.ge@phd.mcombs.utexas.edu
Ph: 512-471-7962

Prabhudev Konana
Associate Professor of MIS
prabhudev.konana@mcombs.utexas.edu
Ph: 512-471-5219

Huseyin Tanriverdi
Assistant Professor of MIS
Huseyin.tanriverdi@mcombs.utexas.edu

Department of MSIS
McCombs School of Business
1 University Station; B6500
The University of Texas at Austin
Austin, TX 78712
Fax: 512-471-0587

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Abstract

There is an increasing trend for firms to use a portfolio approach to govern their business processes using multiple sourcing mechanisms involving multiple firms and geographic sites. Managers need guidance and frameworks to select the right sourcing mechanisms for different business processes. This article develops two research-driven conceptual frameworks to help managers meet the challenges: (1) a framework for classifying and analyzing different sourcing mechanisms, and (2) a staged-model of major decisions involved in sourcing projects. In the first framework, two major factors that capture underlying strategic intents of sourcing mechanisms, namely governance mode and geographic location are described. Firms may strategically benefit, but may also expose themselves to several vulnerabilities. Second, the article develops a 4-stage model of sourcing choice process. This model provides guidelines to evaluate WHICH business processes are appropriate for various sourcing mechanisms, WHERE to source from, WHOM to select as vendor, and HOW to implement. In making sourcing decisions, the staged-model helps managers to consider process level decision criteria such as process maturity, asset specificity, and strategic criticality; firm level decision criteria such as strategic vulnerability, risk profile, firm's experience with certain sourcing mechanism and offshore countries; and also country-level macroeconomic criteria such as risk profile, political stability, physical infrastructure, labor markets, and regulatory and cultural environments of offshore countries. Understanding the various variables has important implications in writing contracts and service level agreements.

Driven by global IT infrastructure and falling communication costs, an increasing number of firms are exploring various sourcing mechanisms for their business processes for cost and strategic advantage. Once tightly coupled business processes in the firm's value chain are being *unbundled* to exploit global sourcing opportunities, particularly from low-wage counties like India, Philippines and China. However, each sourcing mechanism has different cost, benefit and risk characteristics, and may not be appropriate for all companies or suitable for all business processes. For instance, sourcing from another country may entail low cost or access to new markets, but creates risks due to lack of intellectual property protection or differences in legal and regulatory environments. Thus, managers need guidance to select the most appropriate sourcing mechanism given the benefit-risk tradeoffs, and to efficiently manage a portfolio of sourcing choices.

The sourcing portfolio of a business process can become complex. A senior executive of a large Fortune 100 company revealed during our discussions a complex sourcing portfolio for their call center services. Some of the call center services are conducted by the firm's own employees in

the U.S. (i.e., domestic insourcing); some are sourced from a domestic vendor (i.e., domestic outsourcing); some are done at a subsidiary of the firm in India (i.e., offshore insourcing); and the remaining call center services are outsourced to a Philippines-based vendor (i.e., offshore outsourcing). The domestic outsourcing vendor allocates its responsibilities between its domestic sites and a subsidiary in India. In short, multiple sourcing mechanisms involving multiple firms and geographic sites are used simultaneously to govern call center services of the oil company. The proliferation and co-existence of such sourcing mechanisms increase complexity and present managerial challenges.

In the manufacturing environment, managers have long faced the question of which activities to execute in-house (i.e., insource), and which to buy from outside (i.e., outsource) or source from other countries (i.e., offshore). Manufacturing activities have been unbundled to support such decisions. For example, Li & Fung – producers and exporters of private label consumer goods – exemplifies unbundling as it orchestrates a global network of vendors from 40 countries to deliver high-quality products to its customers. A parka may have been assembled in China with fabric from Korea, label, elastic and studs from Hong Kong, and zipper from Japan².

By contrast, business process sourcing is a fairly recent phenomenon. A business process is often human-intensive. It involves primarily information access, processing, and communication tasks. It adds new levels of complexity as the delivery of services are often synchronous – real-time interaction with customers or entities within a firm – and specification and metrics are relatively difficult to assess. Language and cultural differences may become exacerbated in executing a business process outside the firm. Processes themselves may need deep knowledge of the company and its products and services that are often acquired over time. Furthermore, unlike physical products where product components can be easily partitioned, processes are often inter-dependent. Thus, unbundling business processes is difficult. It entails significant coordination costs. However,

cost pressures are forcing firms to modularize their business processes and gain the flexibility to switch to alternative sourcing mechanisms when they become cheaper, less risky, and more beneficial to the firm.

Fortunately, there is a wealth of academic research to support a framework for analyses of sourcing choices. This article develops two conceptual frameworks to help managers meet the challenges of understanding and classifying the different sourcing mechanisms, and choosing the right sourcing mechanism for business processes. The variables identified will provide key input to writing contracts and service level agreements.

Unbundling and Portfolio Sourcing Example: The U.S Healthcare

In the recent past, many healthcare services and administrative functions are being unbundled and sourced from globally dispersed vendors. For example, information systems maintained in India are used to manage patient profile, insurance, and regulatory compliance. Teleradiology systems allow radiologists in Israel to review digitized X-rays sent from U.S. hospitals. Indian firms (e.g., Wipro Technologies) convert 2-dimensional MRI images into 3-D images for U.S. hospitals for better diagnosis. Physicians in the U.S. make clinical decisions with the help of a decision support systems operated in Ireland. Pharmacy claims are processed in Philippines. Physicians' voice recorded notes on a case are transcribed in India. A panel of doctors from Israel may recommend authorization of an expensive surgery on behalf of a U.S. insurance company. Thus, healthcare providers are increasingly unbundling their processes to leverage global sourcing.

There is also a flow of tasks from offshore countries to the U.S. healthcare system due to advances in information technology. Rarely seen medical conditions (e.g., a rare tumor case) that are difficult for physicians in other countries to diagnose or treat are now diagnosed without physical presence of the patient in the U.S. With the advent of telemedicine, all pertinent medical information of the patient (e.g., X-rays, CT scans, lab tests, etc.) is digitized and electronically

transmitted for remote diagnosis at a fraction of total cost. In most cases, the patient can be treated in his or her home country without the expensive trip to the U.S.

Technically, patients are oblivious to the global network of different service providers. While this scenario is glorious for the industry to improve cost structure, the extreme prospect of various sourcing opportunities should not overshadow the unsung risks and costs. For example, offshore vendors providing medical service to U.S. patients may not be easily governed by U.S. laws related to patient rights and privacy. “*Wouldn’t you be scared to death if it was being done in India?*” said T. K. Kurien, Wipro’s Chief Executive for health sciences regarding healthcare offshoring³.

STRATEGIC INTENTS OF SOURCING MECHANISMS

The strategic intents behind complex sourcing choices can be classified along two dimensions: (1) governance mode, and (2) geographic location.

Governance mode: Vertical Scope

Should the process be governed by the firm (insource) or by an external vendor (outsource)? This is a classic make versus buy decision described in transaction cost economics (TCE) literature. TCE suggests that firms will choose to do activities internally if the total cost – which includes the cost of various risks – from outsourcing (i.e., buying from market) is greater than the cost of doing them internally. The governance mode determines vertical scope of a firm. A firm may choose to shrink its vertical scope by outsourcing some or most of its processes to other firms.

Outsourcing vendors offer benefits such as specialization and economies of scale – through demand aggregation. For example, Cisco, Nortel Networks, and 3Com have outsourced their manufacturing to companies like Solectron, Sanmina, and Flextronics to benefit from vendors’ economies of scale. Such outsourcing may shorten product development cycle, allow firms to focus on core competency, and improve service quality as outsourcing providers are often more responsive to incentives. Outsourcing is also used as a way to deal with the uncertainties resulting

from economic cycles. For instance, a firm may choose to retain only 60-80% of its labor needs inhouse and outsource the rest to a vendor. When economic condition changes for the worse, outsourcing contracts can be terminated while inhouse employees are retained. Such a strategy improves employee morale and public relations.

However, outsourcing may expose the firm to several risks and become strategically vulnerable. Outsourcing a large number of critical functions may lower barriers to entry for competitors of the firm. A firm is vulnerable to loss of organizational knowledge and contractual risks due to opportunistic behavior of the vendor. Further, outsourcing increases the coordination among different organizational processes and affects relationships with customers and employees. However, when firms choose to insource activities, they retain administrative control, hold discretion under uncertainty, safeguard intellectual property, lower coordination costs, and avoid potential opportunistic behavior from vendors. Thus, firms must evaluate the benefit-risk tradeoffs in evaluating the vertical scope.

Location: Geographic Scope

Should the process be located at a domestic site (home country) or an offshore site? Locations of firm's processes, i.e., the extent to which value chain activities of the firm are spread and coordinated across country boundaries determines geographic scope of the firm.

The major attractiveness of expanding geographic scope through offshoring is the availability of low-cost talent and inputs, exposure to new markets, and benefits from location-specific advantages such as tax holidays. These impact foreign direct investments and international trade⁴. Moving offshore may facilitate companies to understand the business environment, and to establish their presence in foreign markets. In today's global economy, few companies can afford to neglect major emerging economies such as India and China, which provide not only rich resources and cheap labor, but also growing markets. Even though Dell, Inc. has no manufacturing base in

India, for instance, they have had major brand recognition in India with their offshore call center operations. Their growth in India is significantly above industry average. Offshoring also enables 24x7 development cycle that hastens product testing and release.

There are other exogenous factors that have forced some firms to look offshore. The shortage of talent pool in the U.S. and increased restrictions on hiring foreign talent have also contributed to offshoring. Limited talent pool also implies firms have difficulty retaining as “talent poaching” increases and salaries climb faster. There are externality effects as well: “*Our competitors are all doing it, so we have to do it,*” said IBM director for global employee relations Tom Lynch in an internal meeting. This theme is repeated in offshoring strategy of software service providers like Oracle, BMC Software, Accenture, and EDS and traditional companies such as American Express, Bank of America, Ford, GE to name a few.

However, the benefits can be overshadowed when risks of doing business in a foreign environment are considered. The lack of physical infrastructure, the quality of labor, distance (i.e., language, culture, legal, time differences) and the political environment will counter the advantages of wage differential and highly available labor pool in foreign countries. The risks of unstable government, policy shifts in taxation and regulation, or outright expropriation may induce the firm to seek safeguards by sourcing the services from host-country vendors.

CLASSIFICATION OF SOURCING MECHANISMS

As shown in Figure 1, the two dimensions – governance mode and location – allow managers to think of four distinct sourcing mechanisms: domestic insourcing, offshore insourcing, domestic outsourcing, and offshore outsourcing.

<INSERT FIGURE 1 HERE>

Domestic Insourcing

Domestic insourcing implies a business process is governed by the firm and located at a domestic site, i.e., in the home country of the firm. This is the traditional sourcing mechanism used by firms. The firm uses its own employees, physical premises and equipment for running the process. It maintains full control over the process.

Offshore Insourcing

In offshore insourcing, a business process is governed by the firm and located in an offshore subsidiary of the firm. This is an emerging sourcing mechanism. Macroeconomic conditions make it attractive to produce services of a business process in a certain offshore country as discussed earlier in geographic scope. A firm may consider leveraging its existing subsidiaries in that country or setting up brand new subsidiaries for the purpose of providing the services from the offshore sites to the domestic sites of the firm. Examples of offshore insourcing include GE, American Express, and Dell Inc. who have customer call centers in India. HP, Texas Instruments, Trilogy, Oracle, and Intel have development centers in Bangalore, India.

Domestic Outsourcing

In domestic outsourcing, a business process is governed by a vendor who is located domestically in the home country of the firm. Until recently, this has been a heavily adopted sourcing mechanism to reduce vertical scope. The process is conducted mainly by the employees of the vendor, or by employees transferred permanently from the client. For example, Proctor & Gamble (P&G) outsourced its IT infrastructure to Hewlett-Packard (HP) in a \$3 billion, 10-year deal. About 4000 of P&G employees were transferred to HP⁵. General Electric outsourced management of its financial & accounting services to U.S.-based Affiliated Computer Services Inc.

Offshore Outsourcing

In offshore outsourcing, a business process is governed by a vendor who is located in an offshore country. It is similar to the domestic outsourcing in that the firm contracts out the services of a process to an external vendor. Due to macroeconomic differences between the home country (e.g., US) and the offshore country (e.g., India), the cost of the process is likely to be lower. For example, Royal Dutch Shell group outsourced its IT services to Wipro Ltd. in a mega deal estimated to be \$1 billion⁶. Similarly, P&G outsourced its global customer care services to Sykes Enterprises⁷. Offshore vendor may place employees at the client's premises – onsite service – to provide various services. For instance, Infosys – a large Indian IT company – has a number of employees working at the client's domestic site.

Hybrid Sourcing Mechanisms

There are various types of hybrid sourcing arrangements such as joint ventures and strategic alliances that combine elements of both insourcing and outsourcing mechanisms. For example, TXU, a large U.S. utility company, created a joint venture with Capgemini Energy to source some of its IT services and business processes. TXU will own about 3% of Capgemini Energy and it will transfer almost 2,700 of its employees. The 10-year deal is valued at about \$3.5 billion⁸. It is an example of a hybrid sourcing arrangement because the joint venture allows TXU to do some of its IT services and business processes in-house, as in an insourcing mechanism, buy the rest of the services from Capgemini, as in an outsourcing arrangement, yet maintain an equity-stake in Capgemini and enjoy control rights conferred by ownership, as in an insourcing arrangement. The hybrid sourcing mechanisms can span a continuum, ranging from non-equity arrangements at one end to complete ownership at the other⁹. GlaxoSmithKline could have a non-equity partnership to in-license a molecule from its technology partner.

Recursive sourcing mechanisms

It is interesting to note that an outsourcing vendor, who takes on the responsibility of a business process for a client, can in turn, subcontract different parts of the process to multiple service providers in different countries to be able to find the best skills for the best price. In deciding how to govern and locate the process of the client, an outsourcing vendor also has the options of using *domestic insourcing*, *domestic outsourcing*, *offshore insourcing*, or *offshore outsourcing*. For example, IBM Global Services, one of the largest domestic outsourcing vendors in the U.S. has a subsidiary in India. After winning an outsourcing contract in the U.S., IBM Global Services may source some of the work from its Indian subsidiary¹⁰. Accenture, another major domestic outsourcing vendor, opened a facility in Dalian, China, with 100 IT workers to perform applications development and maintenance, systems integration and business process outsourcing¹¹. Last year, EDS launched its Best Shore service and begun sending work offshore to be performed at one or more of its 16 IT facilities in 11 countries, and plans to hire 20,000 more workers in these locations¹².

Sourcing mechanisms, in which the business processes of a client are sourced from multiple domestic and offshore vendors, may initially seem too complex and confusing. However, many of such sourcing arrangements are examples of a recursive use of the 2x2 classification scheme (See Figure 2) we presented in Figure 1. Offshore vendors in India, such as Infosys and Wipro, have considered offshoring their work to subsidiaries in China¹³. We refer to these kinds of arrangements as *recursive* sourcing mechanisms.

<INSERT FIGURE 2 HERE>

Strategic moves among sourcing mechanisms

There is evidence that firms switch among various sourcing mechanisms. Firms moved processes to domestic outsourcing partners, and switched to offshore outsourcing or offshore insourcing over time as cost advantages became compelling. In the early phases of a new sourcing mechanism, there are many uncertainties associated with it. Thus, firms hesitate to switch to a new sourcing

mechanism in a big-bang fashion. Typically, they use a hybrid form (e.g., strategic alliance or joint venture) of sourcing mechanism, which blends features of their existing and prospective sourcing mechanism to discover benefits, costs, and risks of the new sourcing mechanism. Such hybrid sourcing mechanisms allow the firm to share the benefits and risks with the potential vendor. After learning the risks, culture, and business practices, firms may decide different sourcing mechanism. For example, HP and IBM decided to acquire their India-based alliance partners, Digital GlobalSoft and Daksh eServices, respectively, and create wholly owned subsidiaries in India (i.e., offshore insourcing)¹⁴. Table 1 summarizes examples of different sourcing choices for large U.S. corporations.

<INSERT TABLE 1 HERE>

DECISION STAGES OF SOURCING

In this section, we discuss various decisions involved during the selection and management of sourcing mechanisms. Figure 3 provides a summary of the four main decision stages and the factors that influence decisions at each stage. The first stage of the model helps managers decide WHICH business processes of the firm should be done in-house and which processes lend themselves to outsourcing. This stage utilizes various firm and process characteristics as part of the decision criteria. Once insourcing or outsourcing decision is made, the second stage helps managers to decide WHERE to locate the process. The process can be located domestically or offshored. This stage examines the macroeconomic factors in deciding the destination. The third stage helps managers to decide WHOM to select as vendors for those processes that they want to buy from external vendors. This stage aims to maximize the cultural fit between the firm and the vendor. The fourth stage provides guidance as to HOW the new sourcing mechanism can be deployed and implemented successfully.

<INSERT FIGURE 3 HERE>

The four stages may overlap with each other and have feedback and feed-forward cycles among them. The four stages are based on firm's strategic intents regarding vertical and geographic scopes. A number of firm and industry-specific issues as well as broader economic environmental variables impact decisions within each stage and a careful evaluation of those variables provide guidance to managers in choosing the right sourcing mechanism for a given business process.

Decision Stage 1: WHICH processes?

Strategic Motivations

In selecting a sourcing mechanism for a process, managers need to consider both strategic issues and process characteristics. Strategic issues include vulnerability and risk exposure from outsourcing or offshoring certain processes, the externalities imposed from competitive pressure, and the experiences in various forms of sourcing mechanisms. Process characteristics such as maturity, criticality, modularity, human capital, intellectual asset and the IT-business coupling also impact the sourcing choices.

Strategic Vulnerability

Strategic vulnerability refers to the risks associated with outsourcing of strategically important "core competency"¹⁵. Risks may arise from leakage of strategic organizational knowledge to competitors, opportunistic behaviors of vendors, and increase in coordination costs. When perceived risks are high a firm is likely to keep processes in-house. Although strategic vulnerability has been discussed mainly in the domestic outsourcing context, the same issues can be extended to offshoring. For instance, offshoring creates risks when country laws do not protect intellectual property. A U.S. software firm, Jolly Technologies, reported theft of its source code in its Indian subsidiary putting the firm strategically vulnerable¹⁶. Likewise, stability of a nation due to political or social unrest may affect effective functioning of a firm's operations. Firms organize to minimize the risks of an exchange through appropriate sourcing or governance mechanism, which forms the basis for TCE.

Since organizational knowledge may be entrenched in business processes, outsourcing may lead to a gradual erosion of knowledge (e.g., customer knowledge) and potential leakage of such knowledge to competitors through *poaching* of information from vendors¹⁷. In a complex and unpredictable environment, outsourcing may result from the inability to write and enforce a contract that specifies all the contingencies in the future – referred to as *contractual incompleteness*¹⁸. The contract incompleteness may result in ex post opportunistic behavior and friction in unexpected situations that incur renegotiation and adaptation. This behavior – often referred to as *maladaptation*¹⁹ – may lead to time-consuming bargaining over the changes. Furthermore, if the parties have private information in the bargaining stage (e.g., vendor has superior knowledge of the cost structures), they may fail to reach an agreement. When uncertainty and complexity are high, a firm may face difficulty after implementation. For example, variables such as market demand, government regulation, or actions of competitors cannot be completely foreseen and unambiguously specified before writing a contract. When uncertainties are high, firms can maintain control over their processes by keeping them in-house.

In practice, firms usually depend on service level agreements (SLAs) to ensure minimum acceptable level of performance for various scenarios. SLAs try to include a spectrum of service levels and specify both incentive clauses for exceptional performance and penalty clauses for sub-par performance²⁰. For example, a financial-processing system may require hardware and software availability 99.90% of the time. However, it is costly to develop detailed performance metrics, especially when the services involve multiple dimensions. SLAs may work satisfactorily for well-understood technology/business operations with well-defined performance measures such as network reliability, application reliability or response time, but not for less structured technology/business operations that lack clear performance metrics.

Outsourcing may lead to another type of problem – *hold-up* problem – when there is relation-specific investment in physical and/or human assets. Hold-up problem prevents a firm from switching vendors in the event of unsatisfactory relationship since a firm may not be able to seek other vendors easily. The lock-in vendors impose on their clients can be exploited in future renegotiations. Thus, firms are vulnerable when there is significant lock-in with vendors.

Strategic vulnerability may increase further when firms offshore activities, particularly when they choose offshore outsourcing. Offshoring adds another layer of strategic vulnerability that is dealt in greater depth in Stage 2. In summary, factors that alleviate (or intensify) the hold-up problem and maladaptation due to contractual incompleteness favor (or deter) the decision of outsourcing.

Risk Exposure

Apart from the strategic vulnerability arising from maladaptation and hold up problems, a firm is exposed to other risks that may hurt long-term strategic positioning. For instance, offshoring may affect employee morale and attract labor union attention. The recent labor negotiations at SBC, a San Antonio-based telecommunication company, included bringing offshored jobs back to the U.S.²¹ Lehman Brothers and Dell Inc., were forced to bring back part of its customer service processes to domestic in-house after numerous customer complaints and dissatisfaction with the quality of service^{22,23}. Although, such incidences of backlash from customers seem to be rare, they are serious enough to reverse sourcing choices of firms. The following risks due to new sourcing mechanisms were identified based on the discussions with senior executives: damage to customer relationships, damage to employee relationships, damage to shareholder relationships, damage to organizational efficiency, damage to organizational image, damage to financial health, and damage to market share.

A well received tenet of the finance theory is that there is a positive association between risks and returns of an initiative. A sourcing mechanism that promises to increase returns may also

involve high risks. Thus, making sourcing decisions merely on return considerations could mislead firms. Further, risk/return preferences vary across firms. Thus, each firm must evaluate the fit with its own risk/return preference, and the chance and magnitude of damage to a firm's customer relations, employee relations, shareholder relations, organizational efficiency, financial performance, and market share with new sourcing mechanism.

Competitive (bandwagon) Pressure

Firms are pressured to adopt alternative sourcing mechanisms when other firms in their industry begin adopting those mechanisms. This is known as the "bandwagon effect." Firms are tempted to jump on the bandwagon of companies that have already adopted the new sourcing mechanism. When the competitors choose that sourcing mechanism and report positive outcomes, firms seek to imitate their success and minimize the risk of falling behind²⁴. Publicly traded firms that are often under pressure to cut costs and show improved performance are more likely to respond to the bandwagon effects.

Prior Firm Experience

Firms differ in their experiences and knowledge about doing business in foreign countries or about using different sourcing mechanisms. The experience may be related to the diversity of current employee base and the familiarity of the culture and work ethics of foreign workers within the firm. If the firm already has a presence in an offshore country, knows the local business environment, has connections with local firms, understand local culture, labor skills and knowledge, and is satisfied with them, it will be positively predisposed to the idea of offshoring some work to that country. The experiences shape firm's choices. One of the CIOs interviewed for this study confirmed that the decision to consider offshoring to India was largely influenced by firm's prior experience with employees of Indian origin within the firm, and culture and work practices of India.

Lack of knowledge and experience about the new sourcing mechanism creates a “knowledge barrier” to the adoption decision. The firm has to learn about it and develop firm-specific knowledge for running it effectively. Further, prior experiences expose the firm to the contracting environment and opportunities to enhance related capabilities, which will facilitate the firm to react better to unforeseen circumstances.

Candidate Processes/Functions

Business process characteristics such as process maturity, strategic criticality, modularity, human capital asset, intellectual asset, and IT-Business coupling influence whether the firm selects an insourcing or an outsourcing mechanism. The characteristics impact potential costs, benefits, and risks of these sourcing mechanisms. Even though firms generally have similar processes, characteristics of processes may vary from firm to firm. Because of such differences, different firms tend to use different sourcing mechanisms for the same processes.

Process Maturity

Unbundling a business process from the rest of the processes requires a certain level of process maturity. Analogous to product lifecycle, business processes have life cycles. In the early stages, there are many technical and administrative uncertainties in a business process. The interactions between the new process and the existing business processes are often ad hoc and not well understood. Thus, a significant number of exceptions can occur, which can consume resources and increase costs of running the process. The coordination between the new and the old processes is also likely to entail high costs. Over time and through experience, the firm learns about the process, how it interfaces with other processes, and reduces technical and administrative uncertainties. Interactions with other processes become standardized. Outcomes of the process can be predicted with a higher degree of certainty, and thus exceptions can be minimized. In short, the process matures. A mature process is a likely candidate to be decoupled from the value chain through

outsourcing or offshoring without incurring significant coordination costs. Some examples of mature processes are: payroll processing, claims processing, and travel services.

Processes with lower maturity levels have higher uncertainties. Uncertainties make it difficult for firms to specify and verify future outcomes. In such an environment, contracts with external service providers are necessarily incomplete. When unforeseen contingencies arise, the market contracts are poorly adapted to the changing environments and the favored parties may opportunistically interpret the terms of the contracts. Since lower process maturity would lead to higher transaction costs, the firm is likely to keep such processes in-house.

Process specificity: Human Capital and Intellectual assets

Whether the business process under consideration is specific to the firm, requires tacit knowledge, or whether it is a standard processes across many firms are major determinants of the contractual costs and risks involved in outsourcing. Specificity of intangible assets embedded into the process, such as specialized know-how, proprietary knowledge and a high level of customization, is particularly important²⁵. Intangible assets involved in a business process can be classified into two: (a) human capital specificity, and (b) intellectual asset specificity.

Human capital specificity refers to the extent to which the skill and knowledge of the employees engaged in the business process are specific to the firm. Intellectual asset specificity refers to the extent to which software applications, procedures, routines, data, patent and copyrights embedded in the process are specific to the firm.

Processes that have high human capital specificity will entail significant firm-specific training of employees since they need a good understanding of the firm's specific products and customers to run the business process effectively. When tacit knowledge acquired with experience is involved, knowledge transferability is inherently difficult for outsourcing or offshoring. When human capital specificity is high, outsourcing or offshoring could lead to high risk of hold-up problem. Even when

outsourcing relationship is established successfully through extensive human resource investment, it is costly to switch vendors or replicate the investment; the current vendor has a high lock-in with the customer, which increases the likelihood of hold-up problems discussed earlier. When firms outsource their functions, they often transfer the associated employees to the outsourcing vendor to keep human capital assets of the functions intact. Such approaches expose firms to the risk of losing organizational knowledge over time as the transferred employees will have less incentive to invest in the previous firm's specific skills and knowledge as they are paid by the outsourcing vendor²⁶.

Since human capital is usually tacit and resides in the minds of the employees, it is difficult for the firm to protect it. When an employee quits, the tacit knowledge leaves the firm along with the employee and can be used for the benefit of competitors. Firms can minimize such leakage to some extent by including clauses in employment contracts that limit employees' ability to use company-specific knowledge with new employers. However, they may not be enforceable or pursued meaningfully in offshore countries. Thus, processes that have high tacit knowledge are risky to outsource or offshore since organizational knowledge cannot be preserved.

In comparison, firms may have better control over firm-specific intellectual assets that are embedded in the business process. For some intellectual assets, it may be possible to obtain legal protection through copyrights, trade secrets, patents, etc. For others, firms can include intellectual property clauses in their outsourcing contracts to prohibit vendors from using firm-specific process knowledge for the benefit of other clients. Nevertheless, firms cannot have complete protection over the intellectual assets embedded in a business process. Thus, firms may be better off insourcing those processes that contain highly firm-specific intellectual assets.

Strategic Criticality

Strategic processes, i.e., those processes that are valuable, rare, difficult-to-imitate and difficult-to-substitute are usually deeply embedded in the firm's organizational and social fabric. Such processes

have tangible or intangible resources that the firm will not want competitors to imitate. Thus, they are not likely candidates for outsourcing to domestic or offshore vendors. The firm would be concerned with the problem of “information poaching”; vendors may use the information gathered from the outsourcing relationship for the benefit of other clients²⁷. Thus, even when a strategic process is mature, a firm is likely to refrain from outsourcing to be able to retain control over it. For example, the supply chain process at Dell may be viewed as a mature process. However, this process is strategic to Dell’s competitive advantage and, therefore, it is retained in-house even if it could potentially be decoupled from other operations²⁸. Note that human resource specificity, intellectual asset specificity, and strategic criticality criteria are highly intertwined²⁹.

Modularity

As discussed above in covering the concept of unbundling, modular business processes can be disaggregated and recombined into new configurations with little loss of functionality. Components of such business processes are relatively independent of one another. Interfaces describe in detail how the modules will interact with each other, including how they fit together and communicate. A modular business process architecture, and an IT architecture that supports it, can enable the firm to locate some of its business processes outside of the firm without losing functionality or the ability of the system to function as a whole. When process architecture is compatible with the overall IT architecture, they can be recombined easily with one another. IBM, for instance, is marketing its products to support such on-demand configuration of process and IT. Individual modules can be sourced from external vendors or executed inside the firm without the loss of functionality or control. Vendors servicing outsourced process models will be oblivious to other modules not under their control. Vendors only need to know about how to interface with the rest of the firm’s processes. That is, vendors need to know what kinds of inputs (e.g., data, information, tasks, jobs, etc.) they will receive from the other processes and what they will provide back to them in return.

Since modularity enables unbundling, and reduces coordination costs, firms that have modular processes are likely to use outsourcing/offshoring whereas firms that use tightly coupled business processes are likely to use insourcing mechanisms.

When the services of individual process modules can be purchased in competitive markets, firms can no longer achieve competitive advantages from those modules. Competitors can imitate the advantages from an individual module by sourcing it from the same vendor. However, business process architectures of firms are more difficult to imitate. Due to the complexity of the overall system of business processes (i.e., the sheer number of processes and the interactions among them), competitors are less likely to observe, decipher, and imitate overall business process architecture of a successful firm. Thus, firms must focus on designing, managing, and continuously updating their business process architectures while developing relationships to source individual process modules from external vendors. The ability to control the business process architecture and the ability to manage a portfolio of sourcing relationships are becoming the most important sources of competitive advantage in an era of intense outsourcing and offshoring of business processes

IT-Business Coupling

A related, but distinct aspect of business process modularity is the coupling between business processes and IT infrastructure of the firm. Most business processes are enabled by the IT infrastructure of the firm. Similar to the choices available in the design of business processes, an IT infrastructure itself can be designed as a tightly coupled system or as a modular system. In tightly coupled IT systems, components of IT (e.g., hardware, software, communications) are highly integrated with each other and with the business processes of the firm. In modular IT systems, the whole is decomposed into modules. There are well designed interfaces among IT modules as well as between IT and business modules. Tight integration and coupling between business processes and IT can inhibit firm's ability to detach some processes and source them from outside. IT systems of

the vendors may not be easily adjusted to support the business processes and to interface with the IT systems of the firm. Information systems need virtual partition so that processes can be unbundled on demand, and operated on demand from anywhere. That is, resources can be shared and operated globally. For instance, if there is a catastrophic event in an offshore location, such as war, terrorist attacks, and hurricanes, the processes need to be moved to other locations seamlessly through well-designed modular system architecture, in both IT and process architectures of the firm.

Table 2 provides a summary of process characteristics and how they influence a firm's sourcing decisions.

<INSERT TABLE 2 HERE>

Decision Stage 2: WHERE to locate the process?

The comparison of labor costs between domestic and offshore locations may lead to the decision of offshoring to countries with lower wages. However, as discussed earlier, many domestic and offshore location variables influence the choice. Recently, there have been numerous legislations in various states in the U.S. against offshoring. The volatile regulation environment creates uncertainty and firms either postpone offshoring or make domestic outsourcing choices. In some sectors, regulations prevent offshoring of activities such as radiological services in healthcare. Further, strategically, firms may perceive risks associated with public and internal employees with offshoring.

By considering characteristics of a business process and comparing macroeconomic conditions of the home country and offshore countries, managers can assess potential benefits, costs, and risks of unbundling some business processes from the rest of their firm's processes, and sourcing them from external vendors or offshore subsidiaries.

Firms decide a particular country for offshoring arrangements based on trade-offs between the attractiveness of comparative wage advantage, potential market, labor pool, country incentives such as tax holiday, and the risks (e.g., security and stability) associated with the foreign country. The

uncertainty of a new environment such as infrastructure, country risks, and the distance in linguistic, cultural, legal and political system adds to the transaction costs.

Physical and communication infrastructure

The lack of physical and communication infrastructure imposes a number of problems for IT-enabled business process offshoring. Reliable communication infrastructure is a necessary condition, since services occur primarily using this infrastructure. Countries like India and China have set up special export-focused economic zones for software and IT-enabled services with high data rate communication infrastructure, uninterrupted power supply, tax incentives, and other amenities. Despite the lack of infrastructure beyond the economic zones, firms are attracted to these economic zones with special privileges. In China, for instance, these economic zones have different labor laws that prevent unionization, often considered favorably among multinational corporations. Firms must evaluate the infrastructure availability and reliability before making the location decisions.

Labor availability

Availability of high-quality labor pool is a pre-requisite for selection of the offshore location. Although some developing countries have a large labor pool, most labor may not have the language and other skills to be employed for interactive IT-enabled business processes. Sometimes, managers fall into a trap believing large population and high employment are good indicators of sustained availability of labor to suppress wages. When the available talent is limited, the low-wages may not sustain over time. Limited labor pool increases employee churn rate and wages. Managers must evaluate the competition for labor and the extent of relevant labor joining the pool each year.

Country Risk and Stability

Country risk refers to the governance infrastructure such as political, institutional and legal environment of a country. This risk influences the choice of the country. Hall and Jones³⁰ measure governance infrastructure with an index of assessment of risk to international investors, which

integrates: 1) law and order 2) bureaucratic quality; 3) corruption; 4) risk of expropriation; 5) government repudiation of contracts, and an index of openness of a country to trade. These factors along with threat of destabilizing forces, such as security, war, and political changes, determine a country's stability for furthering trade and foreign direct investments (FDI). Stability (and infrastructure) might explain a significantly higher FDI to China than India. In 2003, China has attracted over \$53 billion in FDI compared with \$4 billion to India. The political structure also influences the nature of contracts. In various developing countries the political system consists of numerous parties with dissimilar and opposite political agenda that raise numerous concerns when governments change. Contractual relationship relies heavily on an effective legal system for enforcement, non-repudiation, and protection of intellectual property. Thus, firms' choice process must actively seek to incorporate country risk due to legal and political system.

Incentives

Developing countries often provide foreign investments with incentives associated with special economic zones discussed earlier. These include tax holidays, subsidies and local government support. In addition, some countries are willing to make exceptions for some preferred industries. In India, for instance, many of industry regulations (e.g., pollution control) are suspended for IT sector. Such incentives decrease the cost of doing business offshore.

Distance

Beyond the physical distance between domestic and offshore country, there are linguistic, cultural, legal and political distances that impact uncertainty, and thus transaction costs of outsourcing or offshoring.

Linguistic distance is the gap in the speaking and writing abilities of the workforce in domestic country and the offshore country. When the linguistic gap is large, a country may not be a desirable destination for business process offshoring since the services involve frequent interaction

with internal and external customers of a firm. The low linguistic distance due to English-speaking workforce, for instance, explains why India has been able to attract more software and IT-enabled services relative to China. In contrast, China is able to attract more manufacturing-related investments where linguistic differences have less of an impact. On the contrary, the growing Hispanic population in the U.S. (the largest minority in the U.S. surpassing African-American) and purchasing power is forcing firms to seek offshoring to Spanish speaking countries that are closer to the U.S – often referred to as *nearshoring*. Latin and South American countries have been aggressively marketing nearshore strategy. Spain and Portugal are beginning to tap into low-wage Spanish and Portuguese-speaking countries in South America due to lower linguistic gaps, while France is seeking many former French colonies like Ghana and Algeria for offshoring destination due to French-speaking population in these countries³¹.

The political system not only affects the way the government runs, but also how people think, and deal with situations. Generally, two countries with similar political systems would be more likely to do business with each other. However, anecdotal evidences also suggest that country stability and legal systems override differences in political systems as evident from experiences in China and India. Despite China's political system being significantly different from that of the U.S., China has been a preferred destination for manufacturing as it provides stability. On the contrary, Russia with similar political structure does not have the maturity required for stability.

Legal differences impact firms' decisions on what to outsource and offshore. The legal system plays an important role in enforcing the contracts, protecting intellectual property, and privacy. When the differences are high the uncertainties increase and the cost of legal conflict can be severe. This is an important variable for pharmaceutical companies where patent laws from one country to another can vary. Pfizer and Toyota recently lost patent protection in China. There is significant concern with IP protection of pharmaceuticals in India, since India recognizes *process*

patent and not *product* patent in this industry. India firmly believes that a large poor population will not be able to afford expensive drugs if products are patented. Dr. Reddy's lab that makes generic brand of blood pressure medication – Norvasc – lost patent case against Pfizer in the U.S. However, Dr. Reddy's Lab can sell the same product in most countries worldwide as they recognize India's patent laws.

The uncertainty caused by these distances increases the costs of writing a contract, the management of the contractual relationship and the coordination costs. It would also be costly for the firm to directly control subsidiaries as the distance would make it difficult to transplant the previous managerial and operational knowledge. When coordination cost can be high, a firm may want to reduce time, distance, linguistic and cultural distances. Infolink, a Mexican IT solution provider, markets its service as *nearshoring*. They argue benefits such as similar time-zone, direct access U.S. flights, closer cultural gap, and even use of U.S. cellular phones as advantages over offshoring to India. In order to reduce gaps, it is not unusual for IT professionals in India to routinely have 10-14 hour schedule several days a week to be able to make conference calls with professionals in the U.S.

Decision Stage 3: WHOM to select as Vendor(s)?

Reputation

Reputation of vendors is a surrogate indicator of capabilities, quality, cost and timeliness. Reputation lowers the need for lengthy contracts to specify all details and also mitigates the problem of *ex post* adaptation when unforeseen contingencies occur. Reputation affects the vendors' willingness to share the cost overrun³². A good indicator of reputation for IT services is the Capability Maturity Models (CMM), which describe the essential characteristics of an organization's functionalities such as software development, people capability, software acquisition and systems engineering.

Cultural Alignment

The tangible benefits resulting from cost savings and quality improvements often overshadow the potential risks resulting from cultural mismatch between vendors and the firm. CIO of a leading health and hygiene company stated in our survey that they were forced to re-consider outsourcing a process after realizing the strong shared values and beliefs of the firm were seriously undermined with the decision. There is sufficient evidence to suggest the importance of cultural alignment in other similar issues. Misalignment of culture has been responsible for many merger failures³³, and several companies (e.g., Dell, Inc.) avoid acquiring new companies for this reason.

Despite the challenges firms have outsourced entire functions to vendors. For instance, Procter and Gamble outsourced all of its IT management to HP³⁴. A senior executive in our interviews reiterated the importance for managers to carefully address the cultural alignment between their firm and that of the vendor when there is a permanent transfer of employees. The vendor's reputation for respect and care for its employees must closely align with the outsourcing firm. The career path and opportunities to grow must not be severely affected; otherwise transferred employees who carry organizational knowledge may leave the vendor soon. The performance and rewarding policies must be similar or better to maintain high levels of commitment. The policies for layoffs must be transparent. Firms may need to incorporate clauses in the contracts on how transferred employees and new hires are treated. When cultural alignment is high, a firm can expect seamless transition, if not, the new sourcing mechanism may be riddled with numerous roadblocks, dissatisfied employees, and high churn rates. Our interviews with senior business executives reveal that they impose constraints within service contracts with vendors on layoff, reward, and performance evaluation policies for one to two years.

Competition among vendors

As competition among vendors increases, the firm is more likely to have alternative suppliers. When switching vendor is a credible threat, the opportunistic behavior of the vendor will be alleviated. The vendor's attempt to haggle over contractual terms when some unexpected things happen would fail if the client can switch to a competitive vendor without much loss. If the firm cannot easily find alternative vendors, the firm will lose the bargaining power to the vendor, who may act opportunistically in this locked-in relationship³⁵.

Decision Stage 4: HOW to implement the new sourcing mechanism?

Making the right decisions in the previous three stages is important for successfully deploying and implementing a new sourcing mechanism. The synergy among process characteristics, location, vendor and sourcing mechanism prevent many of the potential problems that surface in the implementation stage. Nevertheless, the implementation stage presents its own unique challenges to firms. As in any other implementation project, success in implementing a new sourcing mechanism is about *change management* that requires commitment from senior management, allocation of sufficient resources, good communication and coordination among major stakeholders involved (e.g., firm, sourcing vendor, customers, employees), close monitoring of the service level agreements (SLA) and performance metrics set for the business process, etc. In addition to these generic project implementation guidelines, there are four issues that are prominent in the context of implementing a new sourcing mechanism: contracting, incremental versus big-bang implementation approaches, contingency plans and performance metrics.

Contracting

Firms rely on formal contracts for monitoring and coordinating with vendors even when it is impossible to foresee all possible contingencies and prescribe remedies for them. Vendor reputation or the history of good relationships with the vendor cannot eliminate the necessity of a formal

contract³⁶. An effective contract should create incentives and provide insurance for both parties. It should serve as a reference point in resolution of possible disputes. For example, service-level agreements (SLA) specify performance requirements and how performance is to be rewarded or penalized. The contract should include provisions that seek to prevent or solve possible problems. Our previous analyses of vulnerabilities, risk and cost factors can serve as a blueprint for the firm in drafting a comprehensive contract. For example, as discussed in Stage 1, if the firm concludes that the business process under consideration contains important intellectual assets, it can emphasize the protection of intellectual assets by including enforceable actions against violation of intellectual property rights in the contract. Contracts must also specify how transferred employees will be treated. Legal environment in which the contract is signed and enforced affect provisions of the contract. Thus, in offshore outsourcing arrangements, the firm needs to understand legal systems of the offshore country to be able to write an effective contract.

Change Management: Incremental versus Big-bang Approach

Given that employees and customers are sensitive to outsourcing and offshoring decisions, the firm should carefully deliberate whether an “incremental” implementation approach or a radical “big-bang” approach would be more suitable for deploying the new sourcing mechanism. Depending on the cultural circumstances of the firm, either approach may be suitable. Many firms use an incremental approach to be able to explore benefits, costs, and risks of the new sourcing mechanism, and if they are not satisfied, they do not hesitate to revert back to their original sourcing mechanism. The incremental implementation approach does not consume resources of the firm all at once, and provides flexibility in making adjustments as the experience and learning of the firm unfolds. One potential disadvantage of the incremental implementation approach is that it could allow employees, who fear that they will lose their jobs, to build up internal resistance, to take control, and to pressure the firm to give up the implementation of outsourcing and offshoring mechanisms. Employees

resent having to train their replacements and tend to withhold information and knowledge. A radical, big-bang approach that rapidly trains the replacements may allow the firm to minimize internal resistance from existing employees, and make the transition to the new sourcing mechanism swifter. However, the chance and magnitude of a potential failure is greater in a big-bang implementation project.

Contingency Planning

Due to differences in political stability, country security, physical infrastructure, etc., offshore locations could be more vulnerable to catastrophic failures than the U.S. and pose a threat to continuity of business processes of U.S. firms. Failures can even result from natural disasters such as earthquakes and hurricanes. A catastrophic failure in an offshore location could disrupt business processes of a U.S. firm and could hurt revenues, organizational image and reputation. Thus, U.S. firms should develop a contingency plan in the event of massive failures in offshore locations. As part of their implementation, firms must simulate scenarios and understand potential impact. Contingency plans need to be drawn on how the firm will respond if and when such scenarios occur. For example, when a call-center in Philippines or China fails, the firm should be able to quickly assemble a temporary call-center elsewhere that could take over the call-center functions until the offshore sites are back on again. To do so, the firm needs a technical plan that diverts all calls temporarily to a new location, and maintains high availability of the system in multiple locations. It also needs a human resource plan that can quickly staff the temporary call-center with qualified staff. Some firms train their own employees in advance, as part of their contingency plan, so that, in case of a failure, they can pull employees from other functions of the firm and assign them to the temporary call center the services of the regular call centers are restored.

Performance Metrics

The stories of “Life after Outsourcing” of Nextel Communications, which has outsourced 60 percent of its IT functions, show that CIO and lower-level IT managers all deal with the vendors by regularly checking actual performance against SLAs specified in the contracts. The CIO reviews the outsourcing contracts once a month³⁷. Performance metrics other than those in the SLA are necessary since the ultimate expectations of an offshoring/outsourcing contract are cost savings, better return on investment, higher productivity, and improved quality of service and customer satisfaction. Using such metrics to benchmark old and new sourcing mechanisms could provide managerial reference for future decisions. The choice of performance metrics should be based on **process characteristics** and the underlying **strategic intents** of sourcing decisions and not just cost savings.

Conclusions

This article presents comprehensive research-based frameworks to understand and evaluate outsourcing and offshoring choices. The frameworks provide guidance to managers in (1) deciding which business processes should use insourcing mechanisms and which processes are likely to benefit from outsourcing, (2) assessing whether the processes should be located in the home country or sent to offshore locations, (3) selecting domestic/offshore vendors for the outsourced processes, and (4) deploying and implementing the selected sourcing mechanisms. In making sourcing decisions, the staged-model helps managers to consider process level decision criteria such as process maturity, asset specificity, and strategic criticality; firm level decision criteria such as strategic vulnerability, risk profile, firm’s experience with certain sourcing mechanism and offshore countries; and also country-level macroeconomic criteria such as risk profile, political stability, physical infrastructure, labor markets, and regulatory and cultural environments of offshore countries. The staged-model is particularly useful for managing a portfolio of different sourcing mechanisms.

Offshore	<p>Offshore Insourcing</p> <p>Processes are done at an offshore subsidiary of the firm</p>	<p>Offshore Outsourcing</p> <p>Processes are sourced from offshore vendors</p>
Domestic	<p>Domestic Insourcing</p> <p>Processes are done inhouse in the home country</p>	<p>Domestic Outsourcing</p> <p>Processes are sourced from a domestic vendor in the home country</p>
	Insourcing	Outsourcing

Figure 1: Matrix of Different Sourcing Mechanisms

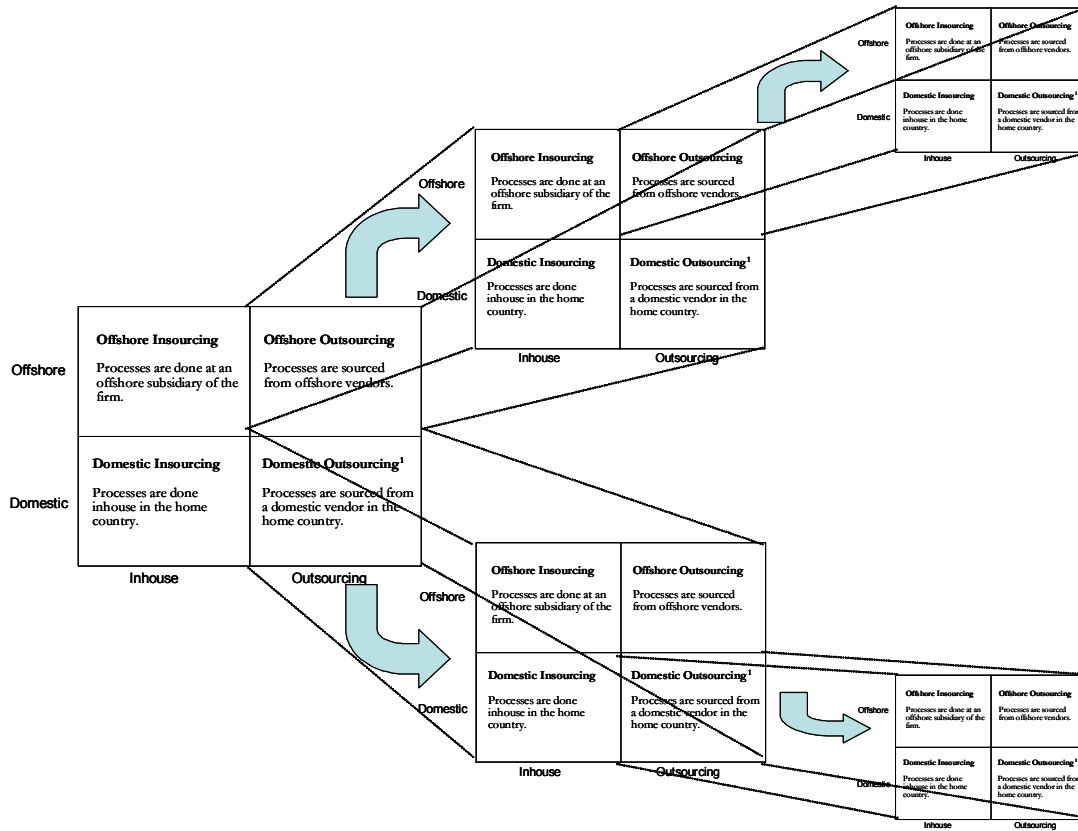


Figure 2: Recursive Sourcing Mechanism

Decision Stages

Decision Criteria

Stage 1	➤	WHICH processes/functions are candidates for outsourcing/offshoring?	<u>PROCESS CHARACTERISTICS</u>	<u>MOTIVATION</u>
			<ul style="list-style-type: none"> • Process maturity • Strategic criticality • Modularity • Human Capital • Intellectual Asset • IT-Business coupling 	<ul style="list-style-type: none"> • Strategic intent • Risk exposure • Competitive pressure • Experience
Stage 2	➤	WHERE to locate processes/functions? ➤ Domestic versus Offshore ➤ Which country to select	<u>DOMESTIC COUNTRY</u>	<u>OFFSHORE LOCATION</u>
			<ul style="list-style-type: none"> • Costs • Incentives • Labor pool • Laws & regulations • Competitive pressures • Coordination efforts 	<ul style="list-style-type: none"> • Country risk • Wage differential • Distance –legal, language, etc. • Incentives • Labor productivity & quality • Laws & regulations • Strategic criticality
Stage 3	➤	WHOM to select (vendor)?	<u>VENDOR CHARACTERISTICS</u>	
			<ul style="list-style-type: none"> • Reputation • Cultural alignment • Competition 	
Stage 4	➤	HOW to implement and measure?	<u>IMPLEMENTATION</u>	<u>PERFORMANCE METRICS</u>
			<ul style="list-style-type: none"> • Contracting • Change management: incremental vs. big-bang • Contingency planning 	<ul style="list-style-type: none"> • Cost Savings • Return on investment • Productivity • Quality of service • Customer satisfaction

Figure 3: Stages in Outsourcing/Offshoring Decision

Sourcing Mechanism	Description	Example
Domestic Insourcing	Process is done in-house in the home country	<ol style="list-style-type: none"> 1. J.P. Morgan Chase & Co. decided to bring back most of the IT activities it now outsources to IBM back in-house. 2. Lehman Brothers and Delta brought some offshored customer service back to domestic insourcing.
Offshore Insourcing	Process is sourced from an offshore subsidiary of the firm	<ol style="list-style-type: none"> 1. Accenture hired over 10,000 employees in India to provide services to U.S. and other countries 2. Ernst & Young/KPMG has a subsidiary in India from which it sources about 15% of its tax related services. 3. Dell has set up consumer call centers in Bangalore to service consumers in U.S., Australia and other English-speaking developed countries. 4. McKinsey Consulting has based a large part of its global research division in Madras, India. 5. KPMG has a subsidiary in Bangalore, over 1000 employees from which prepare 15,000 of 100,000 tax returns abroad.
Domestic Outsourcing	Process is sourced from a domestic vendor in the home country	<ol style="list-style-type: none"> 1. P&G outsourced its personnel management systems to IBM-US, and IT functions to HP. 2. General Electric outsourced management of its financial & accounting services to Affiliated Computer Service Inc. in Texas.
Offshore Outsourcing	Process is sourced from a vendor in an offshore country	<ol style="list-style-type: none"> 1. Royal Dutch Shell group outsourced its IT services to the energy and utilities division of Wipro Ltd. India. 2. Procter & Gamble outsourced its Global customer care services to Sykes Enterprise in Phillipines.
Hybrid sourcing mechanism	Process uses a combination of insourcing and outsourcing.	<ol style="list-style-type: none"> 1. TXU, a large U.S. utility company, created a joint venture with Capgemini Energy to source some of its IT services and business processes. TXU will own about 3% of Capgemini Energy and it will transfer almost 2,700 of its employees. The 10-year deal is valued at about \$3.5 billion. 2. GlaxoSmithKline could have a non-equity partnership to in-licence a molecule from its technology partner.
Recursive outsourcing	An outsourcing vendor subcontracts parts of the process to other outsourcing vendors (domestic or offshore)	<ol style="list-style-type: none"> 1. IBM Global services may source some work from its Indian subsidiaries for its U.S. clients. 2. Accenture, another major U.S. outsourcing vendor has a facility in Dalian, China to perform IT services and business processes for its U.S. clients. 3. EDS launched its Best Shore business initiative to send work offshore to one or more of its 16 IT facilities in 11 countries.

Table 1: Examples of Sourcing Choices

Decision variables	Level	Sourcing decision
Strategic Issues		
Strategic vulnerability	Low	Outsourcing
	High	Insourcing
Risk exposure	Low	Outsourcing
	High	Insourcing
Competitive (bandwagon) pressures	Low	Insourcing
	High	Outsourcing
Prior firm experience	Low	Insourcing
	High	Outsourcing
Process Characteristics		
Maturity	Low	Insourcing
	High	Outsourcing
Asset specificity (human capital & intellectual capital)	Low	Outsourcing
	High	Insourcing
Strategic criticality	Low	Outsourcing
	High	Insourcing
Modularity	Low	Insourcing
	High	Outsourcing
IT-process coupling	Low	Outsourcing
	High	Insourcing
Macro-economic Factors of the Offshore Country		
	Level relative to home country	Location decision
Infrastructure (Physical and telecommunications)	Unsatisfactory	Domestic
	Satisfactory	Offshore
Quality of the labor skills and knowledge	Unsatisfactory	Domestic
	Satisfactory	Offshore
Country risk	Unsatisfactory	Domestic
	Satisfactory	Offshore
Country stability	Unsatisfactory	Domestic
	Satisfactory	Offshore
Local incentives	Unsatisfactory	Domestic
	Satisfactory	Offshore
Distance	Unsatisfactory	Domestic
	Satisfactory	Offshore

Table 2: Summary: Factors and their influence on the sourcing & location Decision

End Notes

- ¹ The authors acknowledge valuable input from Frank Trogus (CIO – ShellOil), Tony Tsai (CIO – P&G), Mike Clifford (CIO – Wholefoods), and Mike Beamer (IT Applications Director – National Instruments) and numerous survey replies from CIOs, CFOs and senior business executives of major corporations.
- ² M.Y. Yoshino and A.S. George, *Li & Fung (a): Beyond "Filling in the Mosaic"--1995-98*. 1998, Harvard Business School. p. Case # 398092.
- ³ A. Pollack, *Who's Reading Your X-Rays?*, in *The New York Times*. 2003: New York.
- ⁴ W.N. Cooke, "The Influence of Industrial Relations Factors on U.S. Foreign Direct Investment Abroad". *Industrial and Labor Relations Review*. 51/1 (October 1997):3-17.
- ⁵ "HP Selected By P&G For \$3 B, 10-year IT Services Pact", in *Dow Jones News Service*. 2003.
- ⁶ "Wipro Bags Shell Contract", in *Indian Business Insight*. 2004. p. 20.
- ⁷ "Syke Signs 5 Yr \$70M Services Agrmnt w/ PG.", in *Market News Publishing*. 2003.
- ⁸ "TXU, Capgemini enter into partnership", in *Pipeline and Gas Journal*. 2004.
- ⁹ P. Kale and P. Puranam, "Choosing Equity Stakes in Technology-Sourcing Relationships: An integrative Framework". *California Management Review*. 46/3 (Spring 2004):77-99.
- ¹⁰ "IBM Signs \$1.1bn Outsourcing Deal with ABB.", in *ComputerWire News*. 2003.
- ¹¹ "Accenture sets up unit in China for outsourcing services", in *Kyodo News*. 2003.
- ¹² "EDS Launches Best Shore(SM) Initiative to Accelerate Client Service Globally", in *PR Newswire*. 2002.
- ¹³ See "Infosys To Hire In A Big Way In China", in *Indian Business Insight*. 2004. p. 7. and K. Shah, "Wipro moves up the value chain", in *The Economic Times*. 2004.
- ¹⁴ See "HP Expands Service Through Acquisition", in *ComputerWire News*. 2004. and D. Tsuruoka, *IBM Aims To Flex Offshore Muscles By Acquiring India's Daksh - More Deals Could Soon Follow - Daksh is ...* in *Investor's Business Daily*. 2004.
- ¹⁵ J.B. Quinn and F.G. Hilmer, "Strategic Outsourcing". *Sloan Management Review*. 35/4 (1995):43.
- ¹⁶ "U.S. firm alleges source code theft," 08/05/04, Sify.com <http://sify.com/finance/fullstory.php?id=13537672>
- ¹⁷ E. Clemons, and Hitt, L.M., *Poaching and the Misappropriation of Information: An Increasingly Important Form of Opportunism*, in *Working Paper*. 2000, University of Pennsylvania.
- ¹⁸ J. Tirole, "Incomplete Contracts: Where Do We Stand?" *Econometrica*. 67/(4) 1999:741-781.
- ¹⁹ S. Tadelis, "Complexity, Flexibility, and the Make-or-Buy Decision". *American Economic Review*. 92/(2) 2002:433-437.
- ²⁰ W. Maurer, R. Matlus, and K. Parikh, *Outsourcing Incentive and Penalty Best Practices*. 2003, Gartner, Inc.
- ²¹ T.A. Badger, *Export Threat: Skilled Workers Look to Unions to Keep Jobs at Home*, in *Augusta Chronicle*. 2004.
- ²² S. Overby, *Lost in Translation*, in *CIO Magazine*. 2004. p. 51-56.
- ²³ K. Krebsbach, "Lessons from the Dark Side; Avoiding Mistakes in Overseas Outsourcing". *Bank Technology News*. 17/(5) (May 3 2004).
- ²⁴ For some main ideas, see E. Abrahamson and L. Rosenkopf, "Institutional and Competitive Bandwagons: Using Mathematical Modeling as a Tool to Explore innovation diffusion". *Academy of Management Review*. 18/(3) 1993:487-517. and P.R. Haunschild and A.S. Miner, "Modes of interorganizational imitation: The effects of outcome salience and uncertainty". *Administrative Science Quarterly*. 42/(3) (Sep 1997):472-500.
- ²⁵ A. Rindfleisch and J.B. Heide, "Transaction Cost Analysis: Past, Present and Future Applications". *Journal of Marketing*. 61/(October) 1997:30-54.
- ²⁶ O. Hart and J. Moore, "Property Rights and the Nature of the Firm. *Journal of Political Economy*". 98 1990:1119-58.
- ²⁷ E. Clemons, and Hitt, L.M., op. cit
- ²⁸ Based on the talk by Kevin Rollins, CEO of Dell Inc., the McCombs School of Business, UT-Austin.
- ²⁹ K. Nam, Rajagopalan, S., Rao, H.R., and Chaudhury, A., "A two-level investigation of information systems outsourcing". *Communications of the ACM*. 39/(7) 1996:36-44.
- ³⁰ R.E. Hall and C.I. Jones, "Why Do Some Countries Produce So Much More Output per Worker Than Others". *The Quarterly Journal of Economics*. 114/(1) 1999:83-116.
- ³¹ N. Diouf, *Outsourcing comes to Africa, bringing jobs and fake Parisian accents*, in *Associated Press Newswires*. 2004.
- ³² A.V. Banerjee, and Duflo, E., "Reputation Effects and The Limits of Contracting: A Study of The Indian Software Industry". *The Quarterly Journal of Economics*. 115/(3) 2000:989-1017.
- ³³ R.A. Weber and C.F. Camerer, "Cultural Conflict and Merger Failure: An Experimental Approach Authors". *Management Science*. 49/(4) 2003:400-415.
- ³⁴ See Note 5, "HP Selected By P&G For \$3 B, 10-year IT Services Pact", in *Dow Jones News Service*. 2003.
- ³⁵ See Quinn and Hilmer, op. cit.; Nam et al. op. cit.
- ³⁶ D. Simester and M. Knez, "Direct and Indirect Bargaining Costs and the scope of the firm". *Journal of Business*. 75/(2) 2002:283-304.
- ³⁷ M. Levinson, "Life after Outsourcing", in *CIO Magazine*. 2004. p. 36-43.