Preface

OVERVIEW

Outsourcing refers to the phenomenon of having someone else do the work for you. Offshoring refers to the situation when such work is performed in a different country. If you go out to a restaurant, this is outsourcing; somebody else spent the time and energy to provide the meal to you. If you call a company for a loan and get connected to an operator in a call center located in another country, then this is a case of offshoring. With the advent of high bandwidth telecommunications links and the diminishing costs of computers and telecommunications infrastructure, a growing number of companies are opting to perform increasing types of professional services in foreign countries. To some, this represents an unprecedented opportunity to reduce costs and to nucleate new strategic relationships. To others, the new phenomenon represents a major threat to current prosperity and levels of employment.

Outsourcing, especially offshoring, of professional services is receiving increasing attention at all levels: business, technical, political, strategic, and economic. At the strategic level, we need to explore new models of operation, and delineate the optimal model for adapting to the changing operating environments in which business partners work together in a geographically dispersed environment. At the organizational level, we must research new relationships between suppliers and buyers. At the technical level, we need to analyze new paradigms for effective collaboration that can mitigate the current overheads involved in geographically dispersed work centers. At the economic level, we need to conduct objective analysis of costs and benefits that accrue to the individual worker, to the host environment, to the sponsoring company, to the operating company, and to the concerned states and countries.

RELEVANCE OF TOPIC IN TODAY'S WORLD

In 1980, the author of this book was completing a master's degree in management and a doctorate in computer science, both in parallel. Potential employers were interested in the former degree or the latter degree, but not both. During an interview with a very large international banking company in New York, he mooted the idea of that company hiring him to do software development activities in India. The country vice president who was interviewing the author reacted, "This is the most ridiculous idea that I have heard in my life." Among the many reasons that he gave for this opinion, the vice president said, "I thought that you were completing a doctorate in computer science. You should know that when programmers are located near the users in New York, they have great difficulty in understanding what the users want; increasing the separation by thousands of miles will greatly aggravate the problems…. and the difference in time makes your proposition even more unrealistic." Despite such strong initial reservations, this multinational company holds the honor of being the first financial organization to establish software development facilities in Asia!

Now there are numerous examples of offshoring of services. The innovations in communications technology, the advent of voice-over-IP technology, and the drastic reductions in prices for such technologies are all facilitating the process of offshoring. Information technologies provide the foundation for offshoring of professional activities. Conversely, offshoring of projects is catalyzing new information technologies and methodologies. By conducting projects on a global basis, one can reduce costs as well as gain access to greater numbers of qualified and trained professionals.

The outsourcing of professional services across corporate and national boundaries became feasible by rapid advances in several technologies. In particular, Internet technology is the pivotal technology that allows sponsor organizations in one country to exchange information synchronously or asynchronously with host organizations in other countries at negligible costs. Further, Internet technology serves as the backbone for Internet telephony, which links corporate personnel to customers and clients, located in other continents, via telephone.

The rapid adoption of offshoring concepts has been catalyzed by four major unrelated factors. First is the growing disparity of wages for similar work across countries. When such imbalance took place in previous centuries, individuals would move from lower-wage countries to higher-wage countries. The wages in the former set of countries would gradually increase, and the wages in the latter set of countries would gradually decrease. The increasing prevalence of barriers to immigration and the growing requirement for work visas have eroded the traditional means for wage equalization, creating significant disparity in wages that, in turn, encourages offshoring to take place.

The second major reason is entirely incidental. In year 1999, companies in many countries were scrambling to take care of the Y2K problem. This was an endeavor on which no extensions in time were possible; all work had to be completed by December 31, 1999. This inflexibility in the time schedule forced countries and companies to become more flexible in terms of utilizing foreign workers. Two mechanisms were adopted: the immigration barriers were temporarily lowered to allow foreign workers to come in and help, on a temporary basis; and the offshoring of applications, including ones previously deemed to be too critical, for being made Y2K compliant by a company located in another country. When the Y2K work was successfully completed in time, the sponsor companies felt that the new work models could be used to address other types of work as well.

The third key reason is related to the European Economic Community making the critical decision to move from multiple national currencies to the Euro. This conversion was unprecedented, both in terms of the number of countries involved and the very small time mandated for the change. Companies, government agencies, and other organizations had to make transformations very fast in order to continue with their respective operations. In essence, this had the same net effect as the one described in the previous paragraph.

The fourth major factor was the concerted effort made by several countries, mostly developed countries, during the nineties to eliminate or drastically reduce the tariff and non-tariff barriers to the movement of computer and communications equipment across national boundaries. The availability of inexpensive computer hardware from foreign countries had the initial impact of decimating the domestic industries of the importing countries. However, over time, this same hardware has enabled such countries to become more competitive in terms of producing software and other knowledge-based services for the global market, including the countries that produced the concerned hardware in the first place. This in turn has led to a round of introspection in developed countries.

In the 2004 United States Presidential election, outsourcing was a popular and controversial issue. Focusing on the consequences for the domestic workforce, companies were criticized for offshore outsourcing and the implications of such arrangements for taxes and the transfer of labor to external entities. Based on earlier experience, offshore outsourcing is likely to witness greater attention during future election years.

Offshoring was initially motivated by considerations of attaining lower costs. Now, offshoring operations are evolving from short term "tactical" relationships into more mature, long-term "strategic" partnerships. These may evolve to become "24-Hour Knowledge Factories" that will involve three or more centers around the world collaborating closely in a continuous cyclic manner. As the sun sets on one collaborating work center, that center turns off. At the same time, the sun rises on the next work center; the latter center turns on and continues the work of the previous center. Just as the Industrial Revolution of the 18th and 19th centuries led to many major innovations, the 24-Hour Knowledge Factory holds the potential to shape the future of business, culture, and even nations.

ORGANIZATION OF SECTIONS AND CHAPTERS

This book is organized as a set of six sections in order to address the full breadth of issues that characterize outsourcing. The headings of each section, as well as the contents of each section, are summarized in the following paragraphs.

Section I: Executive Highlight

This section delineates the major theme of this book: while the notion of offshoring was initially embraced to benefit from lower costs of labor, the motivation for offshoring will be increasingly driven by strategic considerations.

In the sole chapter that comprises this section, Gupta, Seshasai, Mukherji, and Ganguly highlight that the nature of offshoring is evolving from an emphasis on savings in cost of labor to new, more complex, and longer-lasting strategic partnerships. They proceed to develop an analytical model that demonstrates the superior returns on strategic offshore partnerships as compared to the typical low-cost service centers that are currently prevalent. In this context, the authors introduce the 24-Hour Knowledge Factory, a new multinational organizational structure that better exploits geographic distribution for mutual benefit of the participating parties. Finally, a case study provides insights into the operations of a globally distributed work environment.

Section II: Foundations and Frameworks

This section of the book focuses on the forces that govern the offshoring arena and the new paradigms that are emerging to help understand the dynamics of the evolving trends.

In the first chapter of this section, Gupta, Gantz, Sreecharana, and Kreyling cover four issues. First, they examine evolving international conventions to determine whether countries, especially developed countries, can take any steps to inhibit offshoring with the objective of protecting jobs in their respective countries. Second, it looks at statistics from independent sources to see if outsourcing exceeds insourcing, or vice versa, in the case of the US. Third, it looks at trends in outsourcing in the legal arena. Fourth, it looks at the intellectual property aspects of outsourcing and presents a long-term vision on how this difficult issue is likely to be addressed in the long-term.

In the second chapter, Raisinghani and his co-authors note that the increase in offshore operations is leading to negative experiences and unpredicted results at a number of companies. Their analysis focuses on operational and strategic risks and success factors. Their research reaffirms the importance of risk identification and the formulation of strategic plans that include preventive, detective, and corrective control methods of implementation and evaluation.

In the third chapter, Yadav and Gupta apply a paradigmatic and methodological approach to analyze the academic literature on information systems (IS) outsourcing and business process (BP) outsourcing. First, they examine the status of outsourcing research over 10 years (1995 to 2005) in eight leading academic journals, with the objective of comparing the current research trends with earlier research directions. Second, they analyze the research paradigms delineated in these research papers using an Operations Research Paradigm framework. Third, they compare and contrast the outsourcing research work published in three leading European Journals with the work published in three leading American journals.

In the fourth and concluding chapter of this section, Benamati and Rajkumar describe their model of Application Development Outsourcing Acceptance, which is based on the technology acceptance model (TAM). The model is based on the contention that the perceived usefulness and ease of use of outsourcing mediate the effects of the external environment, prior outsourcing relationships, and risks on decision-makers' attitudes toward application development outsourcing. Of the 3,000 decision makers who were contacted, 160 respondents provided data to confirm the applicability of TAM and the influences of these external variables. Three subdimensions of risk, project management, relationship, and employee risk, emerged.

Section III: Sectoral Applications and Case Studies

This section of the book focuses on how offshoring is leading to new trends in different sectors of the economy. The growth of offshoring is impacting major sectors and it is possible to consider only a subset of them. The sectors chosen for this section were selected based on the unique characteristics of these sectors. Several of these sectors have not been considered in any book that has been published so far.

In the first chapter of this section, Gupta, Goyal, Joiner, and Saini present a vision of how the healthcare industry will be transformed by advances in offshoring and information resource management. After analyzing several healthcare scenarios in detail, the authors conclude that healthcare will increasingly use a portfolio approach comprised of three closely coordinated components seamlessly interwoven together: healthcare tasks performed by humans on-site; healthcare tasks performed by humans off-site, including tasks performed in other countries; and healthcare tasks performed by computers without direct human involvement. Organizations that impede or otherwise restrict the use of this multifaceted approach will see higher healthcare costs, and will gradually become less competitive in the global marketplace, as is happening with non-adapting organizations in several other sectors of the economy. Finally, this chapter deals with intellectual property and legal aspects related to the three-pronged healthcare services paradigm.

In the second chapter, Sando contends that with rising and often unreasonable costs associated with the U.S. healthcare system, Americans are becoming more inclined to seek cheaper alternatives. In some cases, their employers are offering them incentives to receive medical care at foreign institutions. Individuals can go abroad to countries and can receive medical services at prices that are half of what the procedure would cost in the U.S. After considering all affected constituencies, she concludes that the outsourcing of medical procedures is in the interest of lower- and middle-class Americans. This new trend foreshadows a push for changes in the business of U.S. healthcare. While in the initial phase, the patients need to travel abroad, the evolution of newer telesurgery concepts will enable medical professionals located abroad to perform medical procedures on patients located in the U.S.

In the third chapter, Schwender and Leet examine the benefits of offshore outsourcing processes in the global entertainment and media industry, both to reduce costs as well as to better manage the quality

and the time-to-market of entertainment industry products, such as films. Citing the rise of digitalization and faster global connectivity, they assert that global accessibility and advances in IT technology are the driving forces for the growing reliance on Asia-Pacific's burgeoning media production industry. This chapter shows that increasing subsets of the media and the entertainment industry will be offshored over time, and that such offshoring will be in multiple directions in terms of both countries and companies.

In the fourth and concluding chapter of this section, Misra describes the use of outsourcing as a business strategy at a leading telecommunications software development company. He presents a framework consisting of seven factors that can be used by companies that intend to utilize outsourcing as a business strategy. This framework includes the driving forces for offshore outsourcing, as well as the selection process of outsourcing vendors and the infrastructure (communication links, hardware, software, and organizational structure). He also presents details of what worked well, what did not, and the lessons learned.

Section IV: National and Societal Implications

This section of the book focuses on the impact that offshoring is having, and will have, on nations and societies. It also examines the growing importance of India and China. Partly with the objective of decreasing the costs of U.S. labor, some states in the U.S. are beginning to use prison labor to perform call center work and allied tasks. This trend is also analyzed in this section of the book.

Job loss is a pivotal issue facing organizations that are engaged in offshoring. Many people view jobs sent abroad as detrimental to the domestic economy, a programmer in India replaces a programmer in the U.S. However, these assumptions may not be true, according to experts in the field. In the first chapter of this section, Bullen, Abraham, Gallagher, Kaiser, and Simon present an analysis of a survey of IT executives. The authors find that domestic jobs will not be lost, but will experience a movement further up the value chain. The authors stress the perceived growing importance of client-facing skills and effective project management. From this analysis, the authors recommend a course of action for mid-level workers, as well as a reform of domestic IT education policies and curriculum.

The second chapter provides a comparative assessment of India and China. Sharma and Chen contend that the challenge of the global outsourcing today is not "Why and what to outsource?" but "How to outsource?". The current theme is "Let us do it right the first time." The availability of mobile technology and superior digital infrastructure is giving way to "distributed IT," making "homes" as the future nodes of outsourcing factories. The barriers to outsourcing are companies' own mind-sets, local regulations, and the lack of robustness of their internal processes. The authors compare the relative strengths, challenges, and growth potential of China and India, based on their hands-on experience of offshoring to these countries over the past 15 years.

The third and concluding chapter of this section examines the role and impact of prisons in offshoring. After visiting a call center at a prison in Arizona and talking with several concerned persons, Hollis observes that the outsourcing phenomenon should not be viewed in the context of foreign countries only; many jobs are being sent to prisons in the U.S., where inmates can provide low-cost, locally based labor. While prison labor has been utilized in manufacturing activities in the past, the new trend is to extend this notion to white-collar jobs, like telemarketing. This chapter analyzes this new type of outsourcing in terms of the costs and benefits for business and consumers, as well as the underlying social implications.

Section V: Collaboration and the 24-Hour Knowledge Factory

This section of the book attempts to delineate the end scenario of the ongoing advances in technologies and approaches to offshoring. Today, offshoring is viewed as an "us" (in the U.S.) vs. "they" (in low-cost countries) issue. Over time, we will individuals from multiple countries collaborating to create a "win-win" situation. The steady state will be characterized by a hybrid offshoring model that involves multiple sets of workers, based in multiple continents. Such workers could be employed in a sequential manner to create the appearance of non-stop work, as in the case of the 24-Hour Knowledge Factory paradigm. The latter concept, akin to the concept of shifts in the manufacturing industry, can significantly reduce development time and costs.

In the first chapter of this section, Seshasai and Gupta introduce the 24-Hour Knowledge Factory as a global work environment where work is passed between individuals in other time zones on a daily basis. The evolution of this model is described from its foundation in manufacturing to an example implementation in software development. A pilot study, conducted at IBM, utilized a set of advanced tools for gathering social and technical data from repositories as diverse as source control systems and team meeting minutes. This pilot study provides good insights into how the 24-Hour Knowledge Factory concept will operate in a commercial setting. The chapter concludes with a set of recommendations for leveraging information resources to achieve the ideal 24-Hour Knowledge Factory.

In the second chapter, Xu emphasizes that in order to be competitive, enterprises must integrate their business processes with those of their customers, suppliers, and business partners. However, very limited research activity has occurred so far on modeling multiparty business collaboration underlying semantics. To address this void, Xu introduces a semantic modeling language that can describe the structure, commitments, and behavior of multiple collaborating parties. She describes this modeling language by references to speech act theory, and includes an interesting example of how it can be applied within a business, as it gradually outsources some of its functions.

In the third and fourth chapters, Denny and his coauthors provide a blueprint of the final stable-state scenario for offshoring. This scenario will involve both onshoring and offshoring, and can therefore be termed as hybrid offshoring. The 24-Hour Knowledge Factory will use three or more strategically located centers to transform the production of software and other intangibles into a process of continuous development. In the third chapter, the authors introduce the notion of composite persona as a potential collaboration model, and highlight its capabilities to mitigate problems arising from communicating across cultures, languages, and time zones. In the fourth chapter, the authors look at the issues involved when work-in-progress is handed off from one site to another. In order to enable such hand-offs to occur in an effective manner, new agile and distributed software processes are needed, as delineated in this concluding chapter of this section.

Section VI: Adaptation Paradigms for Academia and Industry

This section of the book looks at options that academia and industry can and should take to address the realities of a global economy based on extensive offshoring. In particular, the first chapter of this section looks at options for the academic arena, and the concluding chapter contains pragmatic suggestions on how industry can create agile outsourcing structures, leverage available knowledge on a repetitive and incremental basis, and nurture the capability to move from one host environment to another, as and when needed.

In the first chapter of this section, Tastle, White, Valfells, and Shackleton propose changes to the current IS2002 curriculum to incorporate offshore outsourcing education. They identify four options

for successfully integrating offshore outsourcing education in the current curriculum. The authors argue that such education will benefit small- or medium-sized companies too, due to the growing complexity of contract law, contract management, and negotiation in the evolving outsourcing environment.

In the second chapter, Patki and Patki profess that technical solutions should be sought for integration with current systems and practices. They present a broad collection of problems that they frame in the context of fuzzy logic and rough set theory. Based on the theoretical framework, they present insights into how these methods of reasoning can be utilized to make outsourcing more reliable and secure.

In the third and concluding chapter, Crk, Sorensen, and Mitra consider collaborative work groups that span multiple locations and time zones, in terms of the underlying hurdles such as differences in concepts and terminologies between teams; difficulties in understanding the common problem under consideration; and differences in training, knowledge, and skills between teams. They propose an architectural approach for normalizing knowledge and for providing reusable artifacts in a knowledge repository. A framework for knowledge object management is also presented and compared to existing common frameworks showing that that the proposed framework represents a superset of existing frameworks and facilitates greater expressiveness and agility.

CONTRIBUTION TO SUBJECT MATTER

In the spring of 2004, the first course on outsourcing of professional activities was taught at the MIT Sloan School of Management by the author and Professor Lester Thurow, with support from four graduate teaching assistants. Subsequently, courses of this topic have been introduced at several other universities.

Faced with the shortage of independent research on economic aspects of offshoring and a general paucity of literature on professional outsourcing activities, the author and one of his teaching assistants (Satwik Seshasai) wrote a proposal for a special issue of *ACM Transactions on Internet Technology* that was devoted to "The Internet and Outsourcing". After the proposal was accepted, the author found that while the technical aspects could be discussed in the special issue of *ACM Transactions on Internet Technology*, additional mechanisms were needed to provide coverage of business, economic, policy, and other aspects of outsourcing and offshoring. Accordingly, additional special issues and sections of several journals have been published, all devoted to offshoring.

Offshore outsourcing raises interesting issues, from an academic perspective, at multiple dimensions. Alternative models of operation and adaptation to a changing global business environment are necessary at the strategic level. The organizational level holds different challenges as new relationships between buyers and suppliers are defined. At the technical level, the overheads involved in cooperating between geographically dispersed work centers have to be mitigated with novel collaboration paradigms. At the economic level, one needs to conduct an objective analysis of costs and benefits accrued to each worker, host environment, operating company, and states or countries involved in the effort.

This book includes a very select group of manuscripts on diverse aspects of offshoring written by individuals with varied backgrounds. Each of them sees offshoring from a different vantage point. Initially, authors were invited to submit manuscripts based on their own feelings. This resulted in some key aspects of offshoring receiving great attention, and others getting neglected. In areas that were covered by multiple manuscripts, a multi-tier process was utilized to select the best subset and to further enhance the quality of papers in that particular subset. In the case of topics that were not adequately addressed in manuscripts submitted for consideration, personal invitations were sent to relevant domain experts to write on very specific issues. Most of such authors responded positively to the invitation. The material provided by such authors has been included in this book, and has not been published elsewhere.

This book reflects the culmination of work performed over a 4-year period. It presents both the pros and cons of offshoring, provides multiple frameworks and paradigms, and encourages the reader to conduct a customized analysis on what is appropriate and optimal in a given situation. It also projects that the "us" vs. "they" syndrome will be gradually replaced by hybrid offshoring models that will involve close collaboration among workers in different countries and that will provide mutual benefits to the concerned individuals, organizations, and other entities. In particular, just as the industrial revolution had a major and lasting impact on nations, the 24-Hour Knowledge Factory model will lead to a similar restructuring of the global work environment.

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