Preface

The prevalence of electronic commerce that we see today makes it necessary for any employee to be familiar with e-business processes. Whether it is a government, a business, or a nonprofit organization, the employer is invariably found to engage in some form of online transactions. Governments publish policies online, businesses sell goods online, and universities offer courses online. Almost all of them accept payments online. It is no surprise, therefore, that there is a demand for e-business literature meant for specialists as well as nonspecialists. We believe this book will satisfy a good part of that demand. In a single volume, it presents an eclectic compilation of the most relevant details about today's e-business processes. We also believe that business managers and academic researchers alike will find this book useful.

Business Process Management and E-Business Process Management

With the rise of large scale production in the eighteenth century, business process management became the focal point of the business of economics. Adam Smith (1776), in his classic book, discussed business process management by examining the production of pins. He was the first to examine in detail how specialization brings efficiency into production processes. Not coincidentally, it was also the time when humanity witnessed the first rise of multinational corporations in the form of limited liability charters offered to shipping companies by English, French, Dutch, and Spanish governments.

E-business process management is strictly a product of the 21st century. In earlier centuries, it would have been unthinkable even to contemplate e-business process management. Rising computer literacy, falling cost of computers, cheaper communications, and deregulation have all played mutually reinforcing parts in the rise of e-business process management. As e-business grew, so did the research on e-business. The growth in e-business research demanded more journal outlets. Many new journals were started. The most recent among them is the *Journal of Electronic Commerce in Organizations,* introduced in 2003.

E-business process management is important because information and communications technologies (ICTs) play an increasing role in the economy of every country. In the case of poor

countries like India, ICTs play an increasing role in freeing the country out of the poverty trap. In any country, the ICT sector is pivotal in raising the productivity of the economy by raising the productivity of the government, the businesses, and the households. The nature of ICT is distinctly global as it makes physical distance almost insignificant in many types of business processes such as order processing and customer services.

We start our discussion with an in-depth look at e-governance. Without the government setting up rules of the game and actively participating in enhancing the efficiency of the system, all e-business developments would be futile.

Overview of Section I: E-Governance

It has been shown in economics literature that the biggest obstacle for economic growth in developing countries is the lack of good governance. When a government allocates $1, say, for building roads or for flood relief, only a fraction (sometimes even less than 50%) ever reaches the people for whom it is intended. The remaining fraction is eaten up by inefficiencies in the system and by downright corruption. Just a decade ago, the logistics of accounting, bookkeeping, correspondence, and approvals was slow and costly. With interactive use of the World Wide Web, it has become cheaper and faster to execute such logistics.

Chapter I in this book shows how this is done in governance; hence, this chapter is titled e-governance. The technology has become the enabler of this process. Of course, to execute the whole process, there are certain prerequisites. For example, without computers, the execution would not be possible. To run computers, you will need a reliable supply of electricity. To connect computers over long distances, you will need reliable telephone and other networks. These requirements are not trivial in developing countries. In addition, you will need software that is platform independent. Most of all, you will need human resources, people who are capable of handling such a technological leap. In many developing countries, illiteracy itself runs high. For them, even computer literacy is a tall order.

In any given region, three types of agents are involved in e-governance communications: the government, the citizens, and the businesses. The author of the first chapter argues that e-governance can facilitate interaction between governments and citizens, and between governments and business entities. It will increase efficiency just the way automated teller machines have done with withdrawal of money from bank accounts. It will increase flexibility by streamlining the processes and reduce corruption by digitizing the processes. Land registry and electronic booking of railway tickets in India are good examples.

To facilitate orderly e-business processes, channels of communication have to be secure. Without security, any form of trade is restricted to only those parties that trust one another. A global market system of economic transactions is far more efficient than a tribal system. This compels any government to bring about a security based market system.

In **Chapter II**, the author discusses four elements of cryptology on which modern electronic systems of communications rely for security. The first element is privacy, which requires a scheme that will keep the content of a transaction secret from all but those authorized to access it. The second is digital signature scheme, which requires a mechanism whereby a person can electronically sign a document. The third element is data integrity, which needs a method that can detect insertion, substitution, or deletion of data. Finally, the system will require authentication, which requires a mechanism whereby both parties can be assured

of the identity of the other. This chapter provides a primer on cryptology, and addresses all four elements.

E-business does not operate in a vacuum. It has to have legal standing. For example, the degree of legal acceptance of digital signatures varies from country to country. In some countries, even a scanned copy of a check is accepted as a basis for certain kinds of payments. The main legal basis in almost all countries are trademark, copyright, and patents. E-business needs to operate in that context.

Chapter III deals with the five important issues. They are: (1) Digital Millennium Copyright Act (DMCA), (2) digital rights management (DRM), (3) posting copyrighted material on Web sites including appropriate and inappropriate linking to other Web sites, and (4) liability of the Internet service providers (ISPs). The extent of liability is not simply a problem of the ISPs alone. For example, in May 2005, Google was sued by a U.S. Congressman for benefiting from child pornography sites that showed up in Google searches.

Chapter IV reviews e-market literature in scholarly journals. The reviews have one clear goal: to identify the technological trends that have appeared in the last decade. Some specific areas are discussed in detail: architecture, interoperability, technologies, protocols, and services. It then discusses important contributions. The aim of this chapter is to provide a blueprint of the literature related to e-business technologies for e-markets.

As we noted at the beginning of this section, e-business requires many types of interactions between many types of parties over the Internet. This was not possible until clear standards were established. First, such standards were set as the electronic data interchange (EDI) standards. Such standards were used for business-to-business transactions such as automated purchase of goods and services. The first EDI standard set up for North American companies (mostly for American and Canadian companies) in 1985 was called American National Standards Institute (ANSI) standards. Later, a special global standard was set up by the United Nations. With the introduction of the extensible markup language (XML) in 1997, the entire panorama changed. The advantage of XML is its platform and language-independence. It also allowed interactions between parties.

Chapter V shows that there are two classes of XML standards emerging: vertical and horizontal. The vertical standards are industry specific while the horizontal standards cut across different industries. Because the initial development of the World Wide Web operated in the confines of a scientific consortium, security was not an issue. However, today, with complete anonymity available in the Internet, security is a major concern. Different standards are emerging in different industries based on their specific needs. Thus, one can find different standards used in industries such as agriculture, accounting, automobile, banking, insurance, and other services.

Interoperability was a theme touched on in Chapter IV. Government-to-business interaction was discussed in Chapter I. In **Chapter VI**, the authors bring these two themes together. It offers a case study to develop a generic, standardized, interoperable platform (CCIGOV platform) that is able to model and manage administrative business-related processes and content. The motivation is to follow a one-stop approach, where Chambers of Commerce and Industry operate seamlessly across Europe with transactions between various government and business platforms.

Overview of Section II: Mobile Computing

With severe restrictions on the use of airwaves put on by governments around the globe, it was impossible to use private communications channels or personal communications services (PCS). New Zealand started the trend by auctioning off spectrum rights in 1990. In 1993, the U.S. government auctioned off PCS spectrum rights to private operators. Selling such rights would not make sense until it became feasible to have digital communications. On the demand side, the decade of the 1990s has been extraordinary. By 2002, the number of mobile telephones in the world has exceeded the number of land line telephones. It is now recognized that the Internet, television, telephones, and computers can all be rolled into one, making mobile computing very important.

Chapter VII starts with the history of different generations of mobile telephone. From the first generation (known as bricks and now called 1G) to the second generation (2G) where signals became digital with the capability of short message service (SMS) and circuit switched data (CSD). The next generation devices (called 2.5G) became Internet enabled. For example, by 2002, more than half the cellular phones in South Korea and more than 80% of cellular phones in Japan were Internet enabled. Wireless local area network (WLAN) has been growing since the IEEE set up the first standards in 1997. It became known as the IEEE 802.11 standard. They were capable of transmitting signals of up to 2Mbps. New products are expected to come to the market with 802.11n standards that will be capable of handling data rates of 600Mbps. For metropolitan areas, IEEE 802.16 standard called WiMAX are being set up. In Europe, this has become known as HiperMAN (high performance radio metropolitan area network). All of this will blur the distinction between computers, telephones, and television for the third generation (3G) devices.

One special type of networking is very popular today: wireless fidelity or WiFi. **Chapter VIII** discusses WiFi in-depth. First, pure WiFi and its limitations are discussed. WiFi depends on radio frequency that can be propagated within short distances such as inside a home or inside a store. Because it is wireless, it is extremely convenient. For that very reason, it is also very vulnerable. Snooping is extremely easy in wireless networks, and therefore warrants special security measures.

Expanding a wireless network across a city can offer access through moving vehicles, called vehicular ad hoc networks. This method is helping distribution of goods and services in cities. In the future, it can become very useful in rural areas, especially in developing countries. The only problem with such networks is that they are subject to congestion rather rapidly.

While the previous two chapters discuss supply side issues of mobile computing, **Chapter IX** gives a consumer's view of it. Any available technology may not mean much unless a sufficient number of consumers use it. One of the puzzling facts in the European Union (in the so-called E-15 region) is that even though more than 80% of the population could access broadband in 2005, less than 10% actually did so. This chapter discusses a number of issues from the point of view of the consumer. Specifically, perceived usefulness, compatibility with existing values, perceived ease-of-use, result demonstrability, and perceived risks are important elements of any new technology. For example, if consumers perceive that broadband connections could easily lead to identity theft, they may not use the technology, even if it is very cheap.

Overview of Section III: Global Outsourcing of Business Services

An important element of e-business process management is globalization. As economies have moved towards service orientation, agriculture and manufacturing are becoming less and less important. An upshot of this is that more and more jobs require less and less face-to-face interaction. At the same time, long-distance communication is becoming cheaper. The cost of sending an e-mail with an attachment is the same whether it is sent to the next room or to the other end of the world. With Internet telephony, voice message cost is also going down the same path.

Chapter X discusses the issue of outsourcing by taking two particular countries: United States and India. India has become the largest recipient outsourced e-business. The United States has become the largest outsourcer. Thus, a discussion of these two countries throws a revealing light on outsourcing processes. The chapter discusses how India got to such a place through the Y2K problem. Although businesses in the U.S., always looking for ways to cut costs, embraced outsourcing wholeheartedly, the U.S. government, pushed by the voters, has resisted it. Outsourcing has unexpectedly become an exporter of jobs without people physically moving from one country to another. The authors discuss where this trend will lead to in the future.

The process of business process outsourcing is discussed more generally in **Chapter XI**. It distinguishes between inshoring and offshoring, and between insourcing and outsourcing. It points out that offshoring is becoming more popular for four principal reasons: execution of work can become 24/7, cheaper labor is accessible across the globe, communications have become cheaper, and businesses have become more modular. It discusses various strategies from the point of view of the customer, and then goes on to discuss the risks inherent in business process outsourcing.

Overview of Section IV: Web Delivery of College Level Courses

It has been long believed that education at the university level cannot be offered efficiently over long distances. In the past, there have been correspondence courses offered by some universities. But, they left a lot to be desired. There were three main areas of problem. First, they were only as fast as the mail. Second, feedback from the teachers was minimal. Third, it was difficult to cross national boundaries because of the first problem. Fourth, there was no interaction among the students. With the development of XML technology, all four problems are attacked head-on through online delivery of course materials. In this section, two papers discuss this final frontier of education.

Chapter XII discusses business education through the World Wide Web. The earliest form of distance education started with closed circuit television. The technology was clumsy and expensive. With the advent of the Internet, the process has become much more flexible. Videos and online teaching material can be stored in secure locations. They can be viewed anytime, anywhere. Not surprisingly, business education, specifically the Master of Busi-

ness Administration (MBA) programs, are being offered online more than other programs because most business students are already working full time in some business. The chapter therefore pays more attention to online MBA programs.

A critical element in online programs is quality because there seems to be widespread belief that online programs are inferior in quality compared to on-site programs. Universities therefore concentrate on getting their online programs accredited by premier accrediting bodies. For MBA programs, the premier accrediting body is the AACSB International (Association for Advancement of Collegiate Schools of Business, International). Therefore, Chapter XII lists relevant accreditation guidelines of AACSB International wherever appropriate. Additionally, the strengths and weaknesses of online education are discussed. Online programs also require detailed infrastructure to provide the needed technological support.

Chapter XIII tackles the business of online education. Like any other business, we need to discuss costs and revenue of this form of education. It can cost less because it does not require physical infrastructure. On the other hand, it can reduce the opportunity cost of studying as it becomes unnecessary to travel to study. Online education has significant benefits including support for self-paced learning and better discussion between learners and teachers. The design of an online curriculum requires convergence of several dimensions. It requires coordinated efforts of teacher, learner, media designers, communication methods, administration, and marketing. The developers need to consider the power of the suppliers, power of the buyers, substitutes, barriers to entry, and the current degree of rivalry. These factors can be addressed by long-range planning, defining the student target, and forming partnerships with stakeholders in the online education industry.

Overview of Section V: Risk Management

Any new business model comes with its own risks, at times very novel forms of risks. E-business process risks are fundamentally different from traditional business process risks. There are elements of fraud and theft that are truly global in scope. The scale of such risks is unprecedented in history.

Chapter XIV tackles these risks in five dimensions: risks in services, risks in business models, risks in technology, risks in processes, and risks in fulfillment. Probably the most important services risks today arise in banking through fraud. These frauds include bogus invoices, cramming, slamming, loan scams, and phishing. New technologies can accidentally release private information when it is not intended. For example, a laptop computer was stolen, in May 2006, that contained information about 26.5 million veterans in the U.S. The burglars did not know the content of the laptop. Somebody else can do the same to exploit the vulnerability of a company for blackmailing. Any process of risk management requires five dynamic steps: identification, quantification, taking mitigating actions, monitoring, and having a feedback process to make it dynamic.

Chapter XV takes a legal approach to e-risk management. It focuses on a series of risks of legal liability arising from e-mail and Internet activities that are a common part of many e-businesses. Some of the laws governing these electronic activities are new and especially designed for the electronic age, while others are traditional laws only, whose application to electronic activities is novel. E-business not only exposes companies to new types of liability risk, but also increases the potential number of claims and the complexity of dealing with

those claims. The international nature of the Internet, together with a lack of uniformity in the laws governing the same activity in different countries, means that companies need to proceed with caution.

This book contains different facets of e-business process management. The strength of this volume arises from the fact that the contributors are specialists in their areas. They have had many years of experience dealing with the issues they discuss both as academics and as practitioners. We are happy to bring out this collection of chapters on the important topic of e-business process management. We are grateful to Idea Group Inc. for giving us the opportunity to edit this volume. We are particularly thankful of Ms. Kristin Roth for cheerfully guiding us throughout the editing process. Finally, we thank the authors, who have contributed a very informative collection of articles. Tapen Sinha wishes to thank Instituto Tecnológico Autónomo de México and the Associatión Mexicana de Cultura AC for their generous support.

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