E-Business Models, Services, and Communications

IN LEE

E–Business Models, Services, and Communications

In Lee
Western Illinois University, USA

Information Science REFERENCE

INFORMATION SCIENCE REFERENCE

Hershey · New York

Advances in E-Business Research Series (AEBR)

ISSN: pending

Editor-in-Chief: In Lee, PhD, Western Illinois University, USA
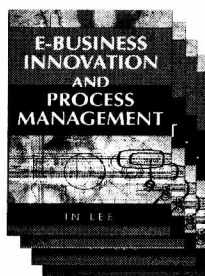
E-Business Innovation and Process Management

CyberTech Publishing • copyright 2007 • 384 pp • H/C (ISBN: 1-59904-277-0) • US $85.46 (our price) • E-Book (ISBN: 1-59904-279-7) • US$ 63.96 (our price)

E-business research is currently one of the most active research areas. With the rapid advancement in information technologies, e-business is growing in significance and is having a direct impact upon ways of doing business. As e-business becomes one of the most important areas in organizations, researchers and practitioners need to understand the implications of many technological and organizational changes taking place. Advances in E-Business Research: E-Business Innovation and Process Management provides researchers and practitioners with valuable information on recent advances and developments in emerging e-business models and technologies. This book covers a variety of topics, such as e-business models, e-business strategies, online consumer behavior, e-business process modeling and practices, electronic communication adoption and service provider strategies, privacy policies, and implementation issues.

E-Business Models, Services and Communications

Information Science Reference • copyright 2008 • 300 pp • H/C (ISBN: 978-1-59904-831-4)US $180.00 • Pre-Pub Price: $165.00

With the rapid advancement in information technologies, e-business is rapidly growing in significance and is having a direct impact upon business applications and technologies. E-Business Models, Services and Communications provides researchers and practitioners with valuable information on recent advances and developments in emerging e-b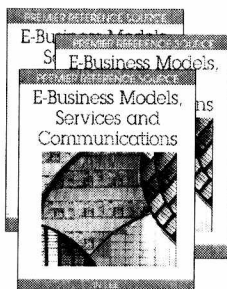usiness models and technologies. This book covers a variety of topics such as e-business models, telecommunication network utilization, online consumer behavior, electronic communication adoption and service provider strategies, and privacy policies and implementation issues.

The AEBR Book Series intends to provide instructors, researchers, professionals, and students in higher education with a coherent collection of books that deals with the most current information about the concepts, issues, applications, technologies, and trends in the e-business area. AEBR publishes the highest quality academic books that foster our understanding of e-business and address the challenges and opportunities faced by the researchers and practitioners.

Preface

The last few years have seen a phenomenal growth and dramatic changes in the field of e-business technologies and practices. Business organizations have begun to explore the use of emerging technologies such as grid computing, mobile computing, Web services, and Web 2.0. While these new technologies have opened an array of new market and business opportunities, many organizations face numerous technical, managerial, and organizational challenges and still lack reference sources for the e-business development and management. As e-business evolution continues with the emerging technologies and business models, an in-depth understanding of e-business models, services, and consumer behavior proves more valuable than ever before for the successful e-business development and management. *E-Business Models, Services, and Communication (Advances in E-Business Research, Vol. 2)* provides researchers, professionals, and educators with the newest research on e-business trends, technologies, and practices. Forty-six noted researchers from 14 countries have conferred their expertise to this publication. The book consists of eighteen chapters and is divided into five segments: Section I discusses various e-business models and organizations; Section II addresses e-business strategies; Section III evaluates Web services; Section IV investigates online consumer behavior; and Section IV discusses online intermediaries.

Section I: E-Business Models and Organizations consists of four chapters. Chapter I, *Markets, Hierarchies, and the Evolving Nature of Interorganizational Cooperation* by Wonyoung Lee, Praveen Aggarwal, Hyonkil Shin, Taihoon Cha, and Seunghan Kim, proposes a framework to account for a recent shift in IS integration and presents a typology for classifying interorganizational systems based on the segregation of IS and relational integration. The resulting 2x2 matrix provides a fuller array of interorganizational relationships that are emerging in the post-Internet era. This study verifies the typology in case studies of four large firms. The study also found evidence that a single organization can engage in different hierarchical relationships with different vendors.

Chapter II, *Implementing E-Business Models in the Public Services: Challenges, Constraints, and Successful Elements* by Francesca Andreescu, draws on qualitative, longitudinal research carried out between 2001 and 2005 in Britain's National Mapping Agency to reveal the processes of strategic and organisational transformation engendered by e-business in an organisation evolving from the classical, bureaucratic, and centralised "public sector model" toward a new organisational form through embracing e-business as a corporate philosophy. This study also explores the key components of the new e-business model implemented by the organisation and the contextual factors that impacted on the effectiveness of e-strategy implementation in order to draw a list of best practices for the implementation of e-business in a public sector context.

Chapter III, *Ambient E-Service: Applications and Embracing Model* by Yuan-Chu Hwang and Soe-Tsyr Yuan, presents an ambient e-service framework that characterizes ambient e-service with three dimensions, followed by several exemplars of ambient e-service applications. In this chapter, the notion

of ambient e-service is so defined as to identify a new scope of mobile e-service, which address dynamic collective efforts between mobile users (enabled by mobile peer-to-peer technology), dynamic interactions with ambient environments (envisioned by location-based service), the moment of value (empowered by wireless technologies), and low cost service provision. The notable features of ambient e-services are the exhilarated linkage based on social context and significantly rapid growth of connections. The ambient e-service embracing model (ASEM) is also proposed to address the integrated consideration of trust, reputation, and privacy required for fostering the growth of ambient e-service.

Chapter IV, *Superior Customer Value and Network Size in Markets Characterized by Network Effects* by Fan-Chen Tseng, Ching-I Teng, and David M. Chiang, models customer perceived value, presents ways to improve the value, and discusses the relationship between customer's perceived value and network size. This study showed that firms can adopt two approaches: increasing customer value and reducing customer costs to delivering superior customer value. This study provides significant insights to firms regarding how to improve customer perceived value.

Section II: E-Business Strategies consists of four chapters. Chapter V, *Pure Play vs. Bricks-and-Clicks: A Study of Their Benefits and Practices* by Youlong Zhuang and Albert L. Lederer, compares Pure Play and Bricks-and-Clicks, two major retailing models, in terms of the e-commerce benefits achieved and information systems management practices used to achieve them. The study found Pure Play retailers apply benchmarking to reap their benefits while Bricks-and-Clicks retailers use process redesign and planning to reap theirs. Pure play retailers are better able to utilize benchmarking to realize market expansion and customer service benefits. On the other hand, Bricks-and-Clicks retailers are better able to utilize process redesign to realize inventory management and cost reduction benefits.

Chapter VI, *Engaging SMEs in E-Business: Insights from an Empirical Study* by Mark Xu, Ravni Rohatgi, and Yanqing Duan, reviews various e-business adoption models and the influential factors affecting the adoption in SMEs. This study empirically examined the adoption level of e-business in a specific industry in the UK, and identified the driving forces and the barriers that push SME up or down the adoption ladder. The current level of adoption is driven by both internal and external factors, including operational benefits, industry common practice, and peer pressure. External forces such as a lack of push from suppliers and customers and a lack of strategic vision of using advanced e-business technology for competitive advantages have determinant effects on the level and scale of e-adoption in SME sector.

Chapter VII, *China and India: E-Business in the Developing World* by Peter Raven, Xiaoqing Huang, and Ben Kim, examines China and India in an attempt to understand their approaches to developing e-business. Each has taken a different path to utilizing the Internet for business. These approaches are based on a number of factors, including government initiatives and focus, infrastructure building, experience and understanding of business operations, and culture, among others. Both countries are poised for rapidly increasing e-business. However, they have huge problems of poverty and inequality between urban and rural connectivity that must be resolved to take advantage of e-business.

Chapter VIII, *Trust and Environment in Inter-Organisational E-Commerce Collaboration* by Amanda Diggles and Carol Pollard, explores inter-organisational collaboration in business-to-business e-commerce with seven informants from four Australian organisations in Tasmania. Using a qualitative case study approach, this research confirmed trust was an important prerequisite for the establishment and development of both electronic and traditional inter-organisational relationships. Collaborative relations such as communication and repeated interactions facilitated the development of trading partner trust. Other factors included trading partner size, reputation and length of pre-existing relationship. Perceived benefits of trading partner trust included general business efficiencies, business growth, faster payment,

increased information sharing and confidence, improved business relations, delivery and reliability. The results enhance organisational awareness of similarities and differences between traditional and electronic inter-organisational trading relationships, and contribute to the growing body of knowledge on trust in inter-organisational relationships.

Section III: Web Services consists of five chapters. Chapter IX *Incorporating Web Services into E-Business Systems: An SME Perspective* by Ranjit Bose and Vijayan Sugumaran, investigates the existing deployment barriers from the perspectives of the three Web services (WS) stakeholders, namely the service providers, service consumers, and the WS standards organizations and presents a challenges framework that organizes and interrelates these barriers in an easily understandable manner to help study further the factors that impact the deployment and use of WS within e-business. Using the framework, this study analyzes WS incorporation challenges for small and medium-sized enterprises (SMEs) since they are a vital engine driving the world economy, and are realizing significant benefits from adoption and implementation of Internet-based business solutions. WS-based e-business system applications promise to do even more for them.

Chapter X, *Modelling in Clinical Practice with Web Services and BPEL* by Iain Morrison, Bryn Lewis, and Sony Nugrahanto, briefly describes an approach to clinical information and service modelling. This approach uses tools and techniques gaining increasing acceptance in the e-commerce domain, which shares many of the technical and interoperability problems present in e-Health. The use of BPEL supports services that are provided by both humans and computers. This allows great flexibility in service delivery and deployment, which has been demonstrated in the MCPOP asthma workflow demonstration.

Chapter XI, *Assessing the Potential Impact of Web Services on Business Processes* by Jan-Hendrik Sewing, Michael Rosemann, Marlon Dumas, and Marcello La Rosa, presents a methodology for assessing the suitability of business processes for Web service adoption, both from a strategic and from a technical perspective. It is shown that, by enriching business process models with appropriate metadata, analysts are able to identify which Web services are most relevant for the automation of business processes. The methodology can also be used to assess the impact of new Web services on existing business processes. The application of the methodology is described using a procurement scenario.

Chapter XII, *Web Service Orchestration and Choreography: Enabling Business Processes on the Web* by Florian Daniel and Barbara Pernici, introduces the reader to a relevant aspect of modern, distributed systems in the context of the service-oriented architecture (SOA) (i.e., the distributed execution of composite applications or business processes). This research clarifies the difference between orchestration and choreography, the two main techniques for the definition of service-based collaborations, discusses their most representative approaches, and binds such approaches to a concrete protocol stack. The study provides insight into some advanced service composition problems and, finally, provides our outlook over future trends in the service composition area.

Chapter XIII, *Metering and Accounting for Service-Oriented Computing* by Arun Kumar and Vikas Agarwal, and Neeran Karnik, presents an architecture for enabling usage metering in service-oriented systems. The success of Service-oriented architectures such as Web Services depends upon availability of supporting functions such as security, systems management, service level agreements, etc. Metering and accounting for service usage is one such important management component that is essential for successful deployments in commercial environments. This chapter starts by defining taxonomy of services from the perspective of usage metering, charging, and business models. The study discusses how service usage can be measured, aggregated, and communicated in a uniform way. Finally, it reports on a prototype design and implementation.

Section IV: Online Consumer Behavior consists of three chapters. Chapter XIV, *Effects of Web-Based Customer Relationship Management on Customer Satisfaction: A Structural Equation Modeling Analysis* by Wen-Jang Jih, Su-Fang Lee, Yuan-Cheng Tsai, and Shyh-Rong Fang, seeks to shed some light on how the customer perception of companies' e-CRM practices affects customer satisfaction with these practices. Web-based Internet features are becoming a standard platform for companies to implement their customer relationship management initiatives. Referred to as e-CRM in most professional literature, this practice is still in the infancy stage of its life cycle in terms of our level of understanding. A structural equation modeling analysis with the primary data collected in Taiwan reveals that online customers' perception of e-CRM practices positively impacts customers' Website satisfaction through their perception of the Website's customer orientation.

Chapter XV, *The Formation of Online Trust* by Anol Bhattacherjee, presents three processes (relational, calculative, and institutional) by which consumers form trust in online firms and describes how these processes change over time as they gain experience with online firms. These processes are tested using empirical data from a field survey of online banking users. The results indicate that relational, calculative, and institutional beliefs are indeed significant drivers of trust. However, calculative and institutional beliefs have stronger initial effects than relational beliefs for new consumers of online firms. The effect of calculative belief on trust decreases with time, while that of relational beliefs increases and that of institutional beliefs remains relatively unchanged. Research and practical implications of these findings are discussed.

Chapter XVI, *The Influence of Familiarity and Security on Decision Making Processes in E-Commerce: The Role of User Experience* by Fahim Akhter and Wendy Hui, analyzes the role of trust antecedents such as security and familiarity when they are used collectively to do online transactions. Trust, in general, is an important factor in conducting e-transaction, which revolve around uncertainty and ambiguity. The fuzzy logic approach provides a means for coping with this uncertainty and vagueness that are present in e-commerce. Therefore, in this study, the fuzzy logic approach is been deployed to develop scales to measure the effects of users' familiarity and perception of security in an online business-to-consumer (B2C) context. This research provides guidelines to vendors on how they could ascertain the trust level of their business and ways of mitigate the negative impact on the trust level.

Section V: Online Intermediaries consists of two chapters. Chapter XVII, *The Roles of Online Intermediaries in Collective Memory-Supported Electronic Negotiation* by Nongkran Lertpittayapoom and Souren Paul, highlights the use of an online intermediary as an effective location from which collective memory support can be offered. Electronic negotiation has become an alternative to face-to-face negotiation. The rise of Web sites such as electronic marketplaces or electronic brokerages also fueled the popularity of electronic negotiation. The current forms of negotiation support systems (NSS) used to support many electronic negotiations offer very little support for historical negotiation data. In order to address this issue, the idea of a collective memory support in negotiations has been proposed in recent years. This study proposes that an intermediary based collective memory support will increase confidence in negotiation, reduce overall negotiation time, and strengthen trust between negotiators.

Chapter XVIII, *Morethailand.com: Online Travel Intermediary* by Pongsak Hoontrakul and Sunil Sahadev, showcases "morethailand.com," an e-intermediary in the tourism industry. Based out of Thailand, the firm is in the process of finding a niche for itself through innovative online and offline marketing strategies with the constraint of limited resources. This case study attempts to focus on the e-business challenges in the travel and tourism sector especially in a developing country like Thailand. It specifically highlights the clash between the traditional and modern form of intermediaries in the travel and tourism sector and how it is bound to evolve in the future. A comparison between different approaches to search engine marketing offers an interesting perspective to the literature pertaining to on line e-commerce. An economic view on the case is also presented.

A large number of e-business applications have been successfully implemented in many organizations as productivity tools and strategic weapons. Coupled with the hyper-competitive global business environment, the rapid emergence of new e-business standards and technologies has accelerated the pace of organizational changes to an unprecedented level. The pervasive use of e-business applications and their inevitable effect on organizations present numerous challenges as well as opportunities for academics and practitioners. *E-Business Models, Services, and Communication (Advances in E-Business Research, Vol. 2)* is a unique collection of the latest research associated with the emerging e-business technologies and applications. As leading experts in the e-business area, the contributors did an excellent job of providing our readers with timely, critical, and thought-provoking knowledge. We expect this book to shed new insights for researchers, educators, and practitioners to better understand the important issues and future trends of e-business research and technologies. I would like to express my gratitude to the authors and reviewers for their invaluable contribution and collaboration. Finally, I sincerely thank Ms. Meg Stocking, former Assistant Executive Editor, and other members of the IGI Global for their help with this book project.

In Lee, PhD
Editor-in-Chief

Section I
E-Business Models and Organizations

Table of Contents

Section III
Web Services

Section IV
Online Consumer Behavior

Section V
Online Intermediaries

Detailed Table of Contents

Section I
E-Business Models and Organizations

The decreasing cost of IT has encouraged organizations to seek new ways of cooperating with members of the supply chain and other key strategic partners. This increased cooperation is giving rise to a new type of interorganizational system (IOS). Before the advent of the Internet, IS integration required significant investments on the part of organizations participating in an IOS. Such heavy investments, in turn, necessitated close strategic cooperation in the non-IS domain as well. Thus, IS integration went hand-in-hand with non-IS (relational) integration in the pre-Internet era. However, advances in Internet technology have commoditized IS integration to a significant extent, thereby allowing the uncoupling of IS integration and relational integration. It is now possible for organizations to have IS integration without developing strong non-IS linkages. We propose a framework to account for this recent shift and present a typology for classifying interorganizational systems based on the segregation of IS and relational integration. We also verify the typology in case studies of four large firms.

Despite the significant progress made by research into e-business models, the issue of how public sector organisations can successfully make the transition from traditional approaches to e-business by taking advantage of e-technologies has received little attention. This chapter draws on qualitative, longitudinal case-study research carried out between 2001 and 2005 in Britain's national mapping agency to reveal the processes of strategic and organisational transformation engendered by e-business in an organisation evolving from the classical, bureaucratic, and centralised "public sector model" toward a new organisational form through embracing e-business as a corporate philosophy. The study also explores the key components of the new e-business model implemented by the organisation and the contextual factors

that impacted on the effectiveness of e-strategy implementation in order to draw a list of best practices for the implementation of e-business in a public sector context.

Chapter III

Most of existing mobile services were designed based on the client/server architecture. Those mobile services neither paid much attention to mobile users' interactions with their environments nor considered the collective efforts between the mobile users in a dynamic peer group. In this chapter, the notion of ambient e-service is so defined as to identify a new scope of mobile e-service, which address dynamic collective efforts between mobile users (enabled by mobile peer-to-peer technology), dynamic interactions with ambient environments (envisioned by location-based service), the moment of value (empowered by wireless technologies), and low cost service provision. The notable features of ambient e-services are the exhilarated linkage based on social context and significantly rapid growth of connections. We also present an ambient e-service framework that characterizes ambient e-services with three dimensions (value stack, environment stack, and technology stack), followed by several exemplars of ambient e-service applications. Moreover, we present the ambient e-service embracing model (ASEM) that addresses the integrated consideration of trust, reputation, and privacy required for fostering the growth of ambient e-services and steers the directions of future fruitful relevant research. The embracing model can also guide the government or service providers to implement the ambient e-service applications that satisfy customers' unique needs under various circumstances.

Chapter IV

Network effect indicates that the value of connecting to a network is positively associated with the current number of customers connected to that network. Network effect strengthens the strong firms, weakens the weak firms, and may lead to a winner-take-all market. Thus, managing customer perceived value is crucial in markets with network effects. This chapter models customer perceived value, presents ways to improve the value, and discusses the relationship between customer perceived value and network size. Implications for e-business practitioners are discussed.

<div align="center">

Section II
E-Business Strategies

</div>

Chapter V

Pure Play and Bricks-and-Clicks represent today's two major retailing models. The current study answers four questions comparing the two models in terms of the e-commerce benefits achieved and information systems management practices used to achieve them. It applies a Web-based survey to compare 69 Pure

Plays to 348 Bricks-and-Clicks retailers in terms of the market expansion, customer service, back-end efficiency, inventory management, and cost reduction benefits reaped as well as in terms of the benchmarking, process redesign, and planning practices used. It found market expansion as the top benefit for both types of retailers. Pure plays exceed Bricks-and-Clicks at achieving back-end efficiency, inventory management, and cost reduction benefits. Pure play retailers apply benchmarking to reap their benefits while Bricks-and-Clicks retailers use process redesign and planning to reap theirs. Pure play retailers are better able to utilize benchmarking to realize market expansion and customer service benefits. On the other hand, Bricks-and-Clicks retailers are better able to utilize process redesign to realize inventory management and cost reduction benefits. The findings suggest potential directions for future research as well as electronic retail practice.

Chapter VI
Engaging SMEs in E-Business: Insights from an Empirical Study /

The rapid rise of e-business has brought profound impact on, as well as significant challenges to, businesses of all sizes. The lack of anticipated engagement in e-business by small- and medium-sized enterprises (SMEs) is still a concern to the UK government. Findings from the literature appear to have revealed a contradictory picture of SMEs' engagement in e-business. There is limited systematic research into how companies, especially small companies, are adopting the Internet technologies. This book chapter reviews current research on SMEs' e-business adoption by following various adoption models. The chapter examines the driving forces and inhibitors that effect the adoption of e-business technology in SMEs. Through interviews with 40 owner managers in the electronic components industry, the chapter reveals that most of the small firms in this industry are at the lower level of the "e-adoption ladder"—predominantly using the Internet for searching information and e-mail. SMEs in this industry have not yet widely engaged in online transactions. The current level of adoption is driven by both internal and external factors, including operational benefits, industry common practice, and peer pressure. External forces such as a lack of push from suppliers and customers and a lack of strategic vision of using advanced e-business technology for competitive advantages have determinant effects on the level and scale of e-adoption in SME sector.

Chapter VII
China and India: E-Business in the Developing World /

The Internet has changed the way many companies do business, but has also tended to increase the disparity between firms in developed countries and those in developing countries. As the digital divide seems to grow, the question becomes how will developing countries catch up? We examine two large developing countries, China and India, in an attempt to understand their approaches to developing e-business. While both countries had access to the technology at about the same time, each has taken a different path to utilizing it. These approaches are based on a number of factors, including government initiatives and focus, infrastructure building, experience and understanding of business operations, and

culture, among others. China appears to be ahead of India in the mechanics and infrastructure, but India is ahead in e-readiness. Both countries are poised for rapidly increasing e-business, however, they have huge problems of poverty and inequality between urban and rural connectivity that must be resolved to take advantage of e-business.

Chapter VIII

This research explores inter-organizational collaboration in business-to-business e-commerce and the factors that influence its development in a unique Australian environment. Using a qualitative case study approach, seven informants from four Tasmanian organisations were interviewed. The data confirmed trust was an important prerequisite for the establishment and development of both electronic and traditional inter-organisational relationships. Collaborative relations such as communication and repeated interactions facilitated the development of trading partner trust. Interestingly, trading partner size did not influence trading partner trust, although "volume of business conducted" between trading partners was an influencing factor. Other factors included trading partner reputation and length of pre-existing relationship. Perceived benefits of trading partner trust included general business efficiencies, business growth, faster payment, increased information sharing and confidence, improved business relations, delivery, and reliability. The results enhance organisational awareness of similarities and differences between traditional and electronic business-to-business trading relationships, and contribute to the growing body of knowledge on inter-organisational trust and business-to-business e-commerce. The influence of the unique Tasmanian environment was acknowledged and discussed as a mediating variable in considering the findings.

Section III
Web Services

Chapter IX

There are a multitude of benefits and challenges that can be derived from the convergence of two major current technologies: (a) Web services (WS)—technology that allows application development and integration using the service-oriented computing paradigm; and (b) E-business systems—using the Internet as the basis for interacting with customers, suppliers, and other business partners. This combination called WS-based e-business systems promises to provide a dynamic e-business environment. We investigate the existing deployment barriers for such an environment from the perspectives of the three WS stakeholders, namely the service providers, service consumers, and the WS standards organizations and presents a challenges framework that organizes and interrelates these barriers in an easily understandable manner to help study further the factors that impact the deployment and use of WS within e-business.