

# Preface

## A Framework for the Study of Mobile Commerce

### INTRODUCTION

This book began as a result of our recognition that mobile commerce is a topic that is of immense importance for business as well as for individual users and consumers. In addition, it seems pretty clear that the importance and relevance of mobile technologies will only increase at an exponential rate in the next few years. Of course, we hear these types of claims about a variety of technologies all the time. What is it that is different about mobile commerce? Further, an obvious question that one should ask in response to this is, “Even if mobile commerce is important, as a business professional why should I care about this topic and take the time to read a book about it?” The answer to this is, we think, at least part of the story that is, in fact, told in this book; but, to put the answer as succinctly as possible, mobile commerce is important because this technological revolution will directly or indirectly affect in a significant way practically every person in the industrialized world. Whether we consider mobile commerce from the vantage point of the consumer as an individual, the businesses that will be servicing consumers, the organizations that will be servicing other organizations, or any combination of the above, mobile commerce technologies will have a profound impact on the way people search out and conduct transactions, interact and communicate, plan and carry out activities, and entertain themselves and play.

The reason for this is that mobile computing technologies will become not only a normal part of the way people conduct business, they will become as ubiquitous as devices that we now take for granted--the phone, the desktop computer, the fax machine, portable entertainment systems, and a host of other commonplace devices that only a few years ago were considered luxuries. For example, if one were to have written a book in 1985 on the topic mobile phones—or, as they were originally called, *car phones*—what would that book have said

about the mobile phone? Certainly, it probably would not have indicated that mobile phones would be as common in 2002 as cordless home phones were at that time. Yet, as documented in many places in our book by many of the experts that we have collected as authors of these chapters, it is likely that the growth in mobile computing technology will far surpass that of the voice-centric mobile phone. This is because of the convergence of a variety of functionalities that are coming together into mobile computing devices that will cause them to be essential tools for individuals and businesses. Thus, mobile commerce will not just be about commerce between a consumer and a business, it will be about ease of access, ubiquity of information, flexibility, and freedom to access electronic resources regardless of time or place.

The primary objective of this book is to provide a single source of up-to-date information about mobile commerce including the enabling technologies (i.e., both the hardware and the software that support mobile commerce), conceptual and empirical research and theory regarding the expected impact of this technology on businesses and consumers, and examples demonstrating state-of-the-art mobile commerce applications and lessons learned. We have purposely tried to design the book to be useful to a wide audience. We think that there is content that will be of interest to managers who want to find out how mobile commerce can be used in their firms. In addition, we have included refereed research articles that should be of interest to academic researchers as well as technologists who develop applications and devices. Finally, the book also contains superb resources such as technology descriptions and case studies that should be useful for educators who teach information systems, electronic commerce, or mobile commerce courses.

The book is divided into three sections: (1) technology, (2) theory and research, and (3) cases and applications. In the remaining sections of this introductory chapter, we discuss the range of issues important to understanding the domain of mobile commerce and follow this with an introduction to the chapters included in each of the three sections.

## THE DOMAIN OF MOBILE COMMERCE

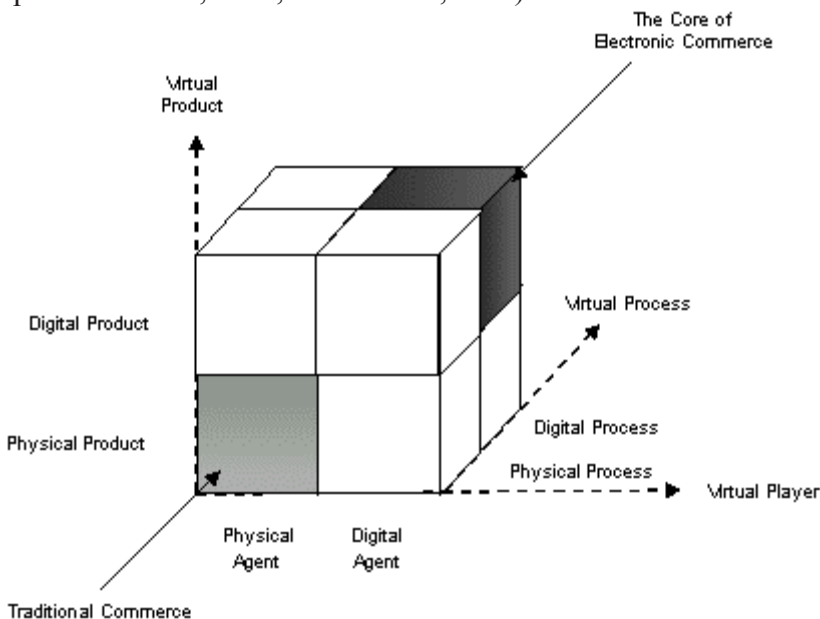
To develop and discuss where and how mobile commerce should be used, it is useful to consider the work that has been previously completed to understand the domain of electronic commerce. For example, in what is now almost a *classic* book on the economics of electronic commerce, Choi, Stahl, and Whinston (1997) offered a useful model for understanding the relationship between the products, actors, and processes that exist in both electronic and physical markets (Figure 1). In this model, products are differentiated based on whether they are physical

or virtual (i.e., electronic). For example, an electronic product is something like a software product or file containing information, whereas a physical product would be an item like an electronic saw or a bottle of milk. A second dimension in the framework differentiates digital from “physical” processes. According to their framework, a digital process is one associated with using the Internet to access the web while a physical process involves a physical act associated with carrying out a commercial transaction. The third dimension is the nature of the agents involved in the transaction. A web-store would be digital while the corner grocery store would be physical.

What is interesting about Choi, Stahl, and Whinston’s model is that the core of electronic commerce—the quadrant defined by digital products, digital services, and digital players—is defined based on the degree to which a product, service, or player is not constrained by the limitations imposed by its physical existence. Of course, what makes mobile commerce unique and powerful is that it unleashes this limitation in commerce; with mobile commerce the locational and physical barriers present in electronic commerce disappear and we are left with the potential for *commerce* to be engaged in anytime, anywhere, and for practically anything.

Of course, this does not mean that mobile commerce will be the all-encompassing tool for all applications. But, it does imply that mobile commerce technology will enable individuals and organizations to extend their reach to the Internet in

*Figure 1: A Model of Electronic Commerce Market Areas*  
(adapted from Choi, Stahl, & Whinston, 1997)



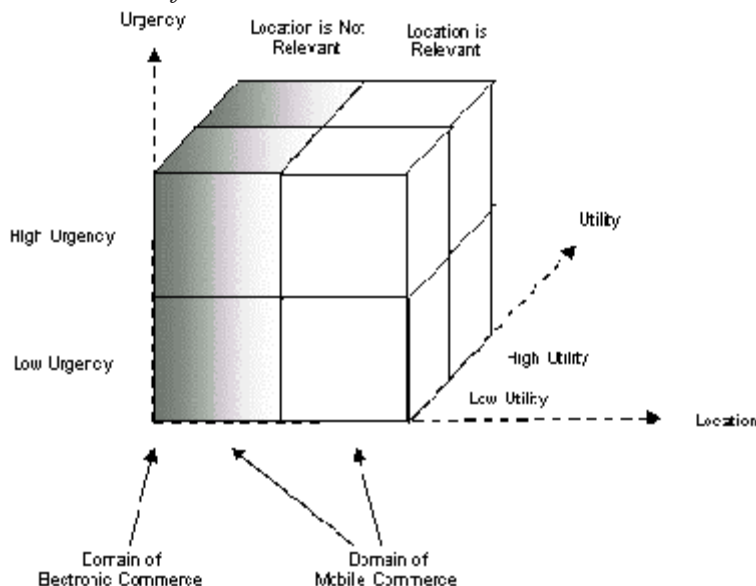
a location-independent manner. Consider for a moment how it is that most people currently think about the Internet and access to it. Although we can use the Internet to break down the barriers presented by location, we often conceptualize of the process of accessing the Internet in a location-dependent manner. In other words, there is a paradox in fixed-line electronic commerce; that is, we must physically go someplace such as an office, a university computer lab, or an Internet café to access the device that frees us from concern about location. Thus, the freedom to access the Internet regardless of location is an important benefit of mobile commerce. What other features that are available via mobile computing technologies add significant value for users relative to traditional, desktop computing forms of electronic commerce? We think that there are three major areas and four interactions between these areas that are important to consider:

1. Location: the relative location of the user when Internet services are needed.
2. Urgency: the relative immediacy of the needed service and the task that is being completed.
3. Utility: the relative importance of the task for the user.
4. Interactions between location, urgency, and utility.
  - a. Location-specific urgency: the two-way interaction of urgency and location
  - b. Location-specific utility: the two-way interaction of utility and location
  - c. Time-dependent utility: the two-way interaction of urgency and utility
  - d. Location and time-dependent utility: the three-way interaction of location, urgency, and utility

There are certainly other variables such as task complexity that might be considered, but the three main areas—location, urgency, and utility—represent those variables that either solely or in combination are what most dramatically distinguishes between electronic commerce and mobile commerce.

Let's examine why these variables are so important. Location is obvious; mobile commerce technologies are essentially independent of location when compared to electronic commerce because the user is able to carry the service around as he or she moves from one location to another. However, for urgency and utility it is not quite as obvious why these variables would be important. For example, for tasks that are important and/or immediate, electronic commerce can be a powerful tool to address the task at hand. However, what happens when an electronic commerce terminal is not immediately available? What this question points out is that when we consider the issue of urgency and/or utility in conjunction with location, these variables in combination highlight the importance of mobile commerce technologies. For example, consider a situation where a salesman has a 2 p.m. meeting with an important client, but it is 1:50 p.m. and he cannot find the hotel. It is this type of situation that highlights one of the true benefits of mobile commerce: the ability to leverage computing and communication resources in the

*Figure 2: The Domain of Mobile Commerce*



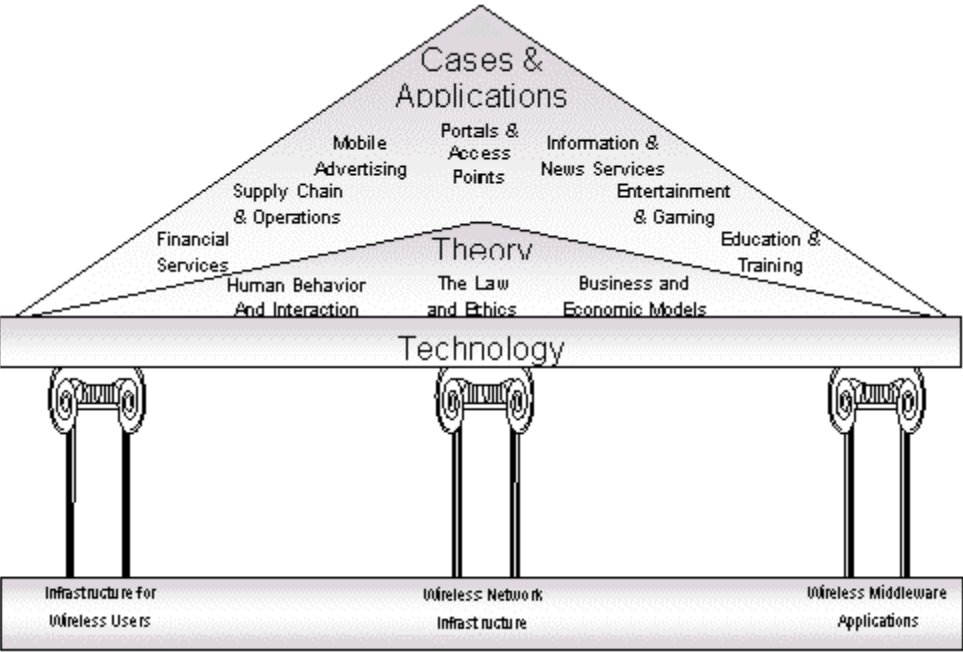
form of location-based services (LBS) to locate the hotel in time to make the meeting. While electronic commerce technology could certainly be used to locate the hotel, traditional electronic commerce services are not always available in the location where the user is situated at the time when he or she needs them. Therefore, it is the interaction of location with urgency and utility that defines the domain of mobile commerce—a domain that is, in many ways, much broader in scope than that of electronic commerce (see Figure 2). While this is obvious, it is nonetheless extremely important in helping to define the role of mobile commerce in supporting users.

With an understanding of the domain of mobile commerce in relation to electronic commerce readily in hand, we are now ready to consider what mobile commerce really means. After all, mobile commerce as a term is broad in scope and therefore lacks limpidity. Thus, to better define the nature of mobile commerce and the content of this book, the next section presents a framework for research and practice associated with the broad concept of mobile commerce.

## A FRAMEWORK FOR MOBILE COMMERCE RESEARCH

Technology is neither developed nor used in a vacuum of thought or planning; most technologies of significance are designed, built, researched, and used in the context of a framework that defines what the parts of the technology are, how they fit together, and how they should be used. Of course, this does not mean that

Figure 3: Framework for Mobile Commerce Research



any such framework is valid or that the framework conceptualized by the designer will be the same framework that will be considered by the user. Nevertheless, frameworks are useful for helping conceptualize topics such as mobile commerce in a way that makes it comprehensible. With this in mind, we propose the framework of mobile commerce research that is summarized conceptually in Figure 3. This research framework is divided into three interrelated categories: technology, theory and research, and cases and applications. As Figure 3 illustrates, technology forms the foundation on which both research and practice are buttressed. On the top of the structure are the applications for which the technology is used. Embedded within these applications is theory, which serves to act as a guide that links the technology with the applications and provides guidance on where, why, when, and how the technology should or shouldn't be used.

This framework is the concept around which this book is organized: technology as the foundation, theory as the guide, and applications as the focus of use and practice. Table 1 outlines these components and elaborates on each by showing the specific categories of research and application areas that are relevant to each grouping. Furthermore, Table 1 also shows a mapping between the framework's components, the book's chapters, and each chapter's related primary (and secondary) research and/or application sub-category. The remainder of this chapter presents an overview of each of the book's chapters in the context of this framework.

Table 1: Framework for the Study of Mobile Commerce

Mobile Commerce Research Category	Sub-Categories	Chapter*
1. Mobile Commerce Technology	A. Wireless user infrastructure (browser, hand-held devices)	2, 3
	B. Wireless middleware (connecting applications and wireless network components)	4, 5, (16)
	C. Wireless network infrastructure (LANs, cellular systems, satellites)	6, 7
2. Mobile Commerce Theory and Research	A. Mobile commerce economics, strategy, and business models	(7), 8, 9, 10
	B. Mobile commerce behavioral issues (consumer behavior, technology acceptance, and diffusion)	11, 12, 13
	C. Legal and ethical issues	14
3. Mobile Commerce Cases and Applications	A. Mobile commerce in individual companies or industries	(2), 15, 16, 17
	B. Mobile advertising and retail	18
	C. Mobile portals	(11)
	D. Mobile auctions	
	E. Mobile entertainment and gaming	(12)
	F. Mobile financial services	
	G. Mobile supply chain management	
	H. Mobile service management	
	I. Mobile transportation management	
	J. Mobile education	19
	K. Mobile news and information access	

\* Numbers in parentheses represent chapters that have a secondary focus in the selected category

## MOBILE COMMERCE TECHNOLOGY

The study of mobile commerce technology can be divided into three sub-categories: user interface, middleware, and network infrastructure (Varshney, 2000). In this section, chapters are included that cover each of these three sub-categories.

**Chapter 1.** If you ask anyone familiar with the mobile commerce industry for an example of an application that has a demonstrated record of success, it is likely that the first words out of his or her mouth would be ‘i-mode.’ In fact, in Japan i-mode is synonymous with the concept of mobile commerce. This chapter, “Mobile Commerce Reality: NTT DoCoMo’s i-mode” by David MacDonald, is the lead contributed chapter in the book for a number of reasons. First, i-mode is a very successful service and MacDonald provides a clearly articulated and compelling discussion about what he sees as the reason for this success. In fact, the success of i-mode is also evidenced by the frequent mention by other chapter

authors of this application. In addition, however, this chapter also includes a valuable discussion of not only the i-mode business model, but also the underlying technology, market applications, and partnerships that have made this service successful. Finally, the author also discusses why he believes that this business model can be successful elsewhere. As you will see in other chapters, this viewpoint is not shared by all of the authors; however, this diversity of opinions is useful because it allows you to judge for yourself regarding this fascinating application and its potential for success outside of Japan.

**Chapter 2.** A well-designed and usable interface is critical for any application. This is particularly true given the interfaces available in most wireless environments, which often makes ease of use a critical factor for the success or failure of mobile commerce applications. The purpose of “Wireless Devices for Mobile Commerce: User Interface Design and Usability,” by Tarasewich is to provide the reader with an overview of current wireless device interface technologies. It also provides guidance on designing usable mobile commerce applications and explores the challenges associated with interface design and usability that the mobile commerce environment still creates for users, researchers, and developers.

**Chapter 3.** As discussed above, location is often important for users of mobile commerce applications. Where you are located may influence what you might do in conjunction with your mobile device, the Internet, or other *normal* behaviors. An application that appears to have great potential for further enabling mobile commerce application is LBS. Yet, there is considerable debate about the business models that might be used to support the development, management, and access to LBS services. Mitchell and Whitmore, the authors of “Location-Based Services: Locating the Money,” discuss not only the features of LBS technology, but also these broader concerns about establishing viable models for provisioning LBS. As they point out, the success of LBS is determined by whether and how providers and network operators identify how to locate not only the subscribers, but also the money. As one of the leading LBS firms in several regions of the world, the information presented in this chapter about the LBS industry represents a valuable primer for anyone interested in understanding the factors at play in the LBS space.

**Chapter 4.** As the Webraska chapter highlights, LBS is an important area in mobile commerce. In fact, as you may have noticed by reviewing the Table of Contents, a large number of the chapters in this book address this topic directly or indirectly. “Towards a Classification Framework for Mobile Location Services” by Giaglis, Kourouthanassis, and Tsamakos explores a topic related to LBS, Mobile Location Services (MLS), by identifying the most pertinent issues that will determine its future potential and success. The chapter provides a classi-



fication of mobile location services that can serve both as an analytical toolkit and an actionable framework that systemizes the author's understanding of MLS applications, underlying technologies, business models, and pricing schemes.

**Chapter 5.** What makes mobile commerce viable is the wireless network infrastructure that supports the applications and services offered by wireless operators and vendors. If you are confused by terms like WLAN, 802.11b, 802.11a, WiFi, Bluetooth, and similar labels and standards, then “Wireless Personal and Local Area Networks” by Tom Zimmerman is a chapter that is a must-read. This chapter discusses terms and concepts concerning wireless technology, wireless standards, and interoperability. It also includes a summary of the important industry associations and standards groups as well as some predictions about which of wireless standards will dominate the marketplace. As a chapter authored by the one of the developers of the concept of the personal area network (PAN), it should be clear that this is an informative chapter that will provide a great deal of useful information about wireless infrastructure and technology.

**Chapter 6.** Over the next several years, there are expected to be dramatic changes in the capabilities of mobile networks as bandwidth and service offerings increase and expand. Most mobile network operators (MNOs) in the U.S. operate 2<sup>nd</sup> generation (2G) networks but will soon be moving to 3<sup>rd</sup> generation (3G) networks. What will the impact of these changes mean for consumers, operators, and other stakeholders? In “The Impact of Technology Advances on Strategy Formulation in Mobile Communications Networks,” Constantiou and Polyzos discuss the important industry players and their likely roles as future generations of wireless technologies emerge. The chapter introduces key players in the mobile industry and presents a history of technological innovation in mobile networks (e.g., from 2G to the 4<sup>th</sup> generation, or 4G) and how this evolution might affect the key industry players. This chapter primarily focuses on the impact of these changes on mobile operators and their strategies. In addition, the relationship that market participants have with other market players is also discussed.

A discussion of wireless technology and infrastructure is certainly important, but it is not sufficient to provide an overall understanding of the impact of mobile commerce on consumers and organizations. As with electronic commerce, information technology is a necessary, but insufficient, condition for successful mobile commerce. In the remaining two sections of the book we have included papers that discuss a broad range of mobile commerce research issues as well as cases and applications of mobile commerce in specific companies and/or industries.

## MOBILE COMMERCE THEORY & RESEARCH

Mobile commerce theory and research can be divided into three broad sub-categories: economics, strategy and business models, behavioral issues, and legal and ethical issues. In this section, chapters are included that cover each of these three sub-categories.

**Chapter 7.** What are the factors that will enable a player to succeed in the mobile commerce marketplace? This is a critical question for many firms that are considering whether and how to build, adjust, adapt, or create a product or service that will be a successful mobile commerce offering. This question is addressed in “The Ecology of Mobile Commerce: Charting a Course for Success Using Value Chain Analysis” by Rülke, Iyer and Chiasson of PRTM consulting. The purpose of the chapter is to present a value chain model for understanding the *ecology* (i.e., the relationship of a firm to its environment) of mobile commerce, including the dynamic relationships among all the elements that are required for a firm to be successful. In doing so, the authors identify the specific technologies, resources, investments, and competencies that firms will need to succeed.

**Chapter 8.** Stuart Barnes has written an informative chapter entitled “The Wireless Application Protocol: Strategic Implications for Wireless Internet Services.” This chapter has the goal of using Porter’s model of industry structure to examine the strategic implications of the wireless application protocol (WAP) for enabling wireless Internet services. WAP is a protocol designed to enable mobile phones to display web pages in a manner that is consistent with the small screen size of most mobile handsets. The chapter discusses how WAP was developed and also provides a detailed analysis of the WAP service industry, including the role of customers, suppliers, rivalry, new entrants, and substitutes. The author also discusses the future of WAP in light of its limitations relative to other mobile protocols (e.g., cHTML). This chapter offers a number of useful insights about the WAP protocol, success factors in mobile computing, and research opportunities for studying the strategic aspects of the mobile commerce area.

**Chapter 9.** “Mobile Business Services: A Strategic Perspective” by Alanen and Autio discusses the strategic and market factors that are expected to be important in the delivery of mobile business services. This is done by discussing the potential benefits of mobile technologies to enterprises in light of both the business and the consumer markets. In addition, the authors also discuss the competitive activity, the value chains, and the starting positions of various types of competitors in the mobile market space. The authors conclude by identifying three key findings: 1) mobile technologies have the potential to revolutionize business processes, 2) opportunities in the mobile space are quite different for businesses when compared to consumers, and 3) the competitive landscape represents a combination of the IT and the telecom value chains. This chapter is informative and insightful

and will provide the reader with a great deal of information about the strategic implications of mobile commerce on business and business operations.

**Chapter 10.** How do you *surf* the Internet from a phone when the screen measures only two inches diagonally and your keyboard is a dial pad? One answer is to use a portal as the launch point for your venture out into cyberspace. It is because of these types of display and input limitations that portals are becoming the preferred starting point for mobile Internet access. The purpose of “Mobile Portals: The Development of Mobile Commerce Gateways” by Clarke and Flaherty is to explore the factors that compose a product mobile portal strategy. In addition, the authors offer several specific recommendations regarding the development and operation of portals, which are particularly useful given the evolving nature of mobile technologies and the associated changes in portal functionality that will be needed to keep a portal relevant and viable.

**Chapter 11.** As with many technologies, the applications that are most popular in mobile computing are those that designers often did not anticipate. Short messaging services and mobile gaming have turned out to be two of the most popular applications for users of mobile devices. Kleijnen, Ruyter and Wetzels’ chapter examines one of these applications, mobile gaming, in an empirical study to identify factors influencing consumers’ acceptance and adoption of mobile gaming services in The Netherlands. Their findings indicate that perceived risk, complexity, and compatibility are the three main factors influencing the adoption of mobile gaming applications. In addition to the empirical study, the chapter also identifies several success factors enhancing mobile service adoption that is based on their extensive review of the literature. Although this is an academic research study that focused on gaming services, the authors provide several useful and insightful guidelines for designing a variety of consumer services that have relevance to managers and system designers.

**Chapter 12.** As new technologies are introduced to a market, there are always risks that the technology may not be accepted by the intended market constituencies. The identification of those factors that cause potential adopters to accept or reject a new technology is important and is the focus of “Mobile Data Technologies and Small Business Adoption and Diffusion: An Empirical Study of Barriers and Facilitators.” This chapter is authored by Van Akkeren and Harker and it presents findings from a two-phase study of the perceptions, needs, and uses of mobile data technologies by various Australian small business owners. The research was conducted in two phases. In Phase I, focus groups were conducted to identify possible uses and applications of Mobile Data Technologies (MDTs) for three types of potential users: those who are either non-adopters of IT and Internet technologies, those who are partial-adopters, and those who are full-adopters. The results of the first phase of the study were applied to the sec-

ond phase, which involved interviewing 500 small business owner/managers about mobile data technology adoption issues and perceptions of MDT usage. The results offer many insights for managers, developers, and researchers and suggest that technology characteristics, adopter attitudes towards various types of technologies, the relationship of the new technology's benefits to the needs of the organization, and the history of the firm in adopting new technologies all are important factors influencing the adoption of MDTs.

**Chapter 13.** Location services are expected to be a killer application in mobile commerce because, as discussed above, LBS brings location-specific information about the user into the mix of services that mobile providers can offer customers. However, with the ability to locate users at any given moment, and track movement and activity, the question of user privacy and the ethical issues associated with privacy become a paramount issue to address. In “We Know Where You Are: The Ethics of LBS Advertising,” O'Connor and Godar provide an intriguing discussion of many of the issues pertaining to this important topic. The authors begin by elaborating on the three features that differentiate LBS mobile commerce from traditional electronic commerce: mobile location identification, synchronous two-way communication, and provider power. They also point out that there are parallel privacy concerns in other areas such as telemarketing, but that the individualization and location-specific nature of LBS escalates the complexity of the ethical issues associated with location services. The main thesis offered by these authors is that the LBS industry will end up being highly regulated unless the industry develops an effective mechanism for promoting and enforcing self-regulation. The chapter also provides a proposed model for self-regulation that the authors suggest will allow the LBS industry to avoid what they consider to be otherwise inevitable legislative controls.

The chapters in Section 2 provide a broad perspective about a variety of topics relevant to mobile commerce; however, most of these chapters focus on a set of general theoretical or conceptual concerns or research topics. The next section includes chapters that provide us with specific examples and cases that illustrate how mobile commerce will impact or be used in specific companies, industries, and/or institutions.

## MOBILE COMMERCE CASES & APPLICATIONS

In our framework for the study of mobile commerce, we have divided the cases and application areas into 11 sub-categories based on our experiences and observations as well as prior published research. The sub-categories include mobile commerce use in individual companies and/or industries, as well as mobile

applications for advertising and retail, portals, auctions, entertainment and gaming, financial services, supply chain management, service management, transportation management, education, and news and information services (Cherry Tree & Co., 2000, Durlacher, 1999; Tarasewich, Nickerson & Warkentin, 2002). In this section, we have included chapters that cover a representative sample of five of the 11 sub-categories from our framework.

**Chapter 14.** How do you use mobile commerce technologies to promote the use of your products or services when you don't sell your products over the Internet? This is a critical question for retailers, manufacturers, and those who produce various consumer goods. In "A Perspective on Mobile Commerce," Mark Lee provides a fascinating account of Coca-Cola's perspective on addressing this question. He points out that an important thing to understand is when and where products would be most likely to be purchased by a mobile consumer. For example, mobile purchases tend to be more of an impulse than a planned expenditure, so one approach for using mobile commerce technologies is to influence the consumer's impulse decision-making process and thereby have a direct impact on their purchasing behavior. To do this, he suggests mobile commerce should be used to build awareness of available products and services, facilitate transactions, develop relationships with consumers, and monitor actual progress and/or results of marketing efforts. The chapter discusses an example of how Coca-Cola North America is currently leveraging the wireless medium in general and mobile commerce in particular, as well as briefly discussing how they use mobile commerce in other parts of the world and in applications such as vending.

**Chapter 15.** What are the criteria for market adoption of wireless data services? The chapter "Location-Based Services: Criteria for Adoption and Solution Deployment," by Astroth and Horowitz of Autodesk Location Services identifies three key attributes to achieve market adoption: wireless data services must be personalized, localized, and actionable. The chapter provides a case study of Autodesk's experiences in Fiat's Targa Connect project that verifies the success of wireless data services that incorporate the three critical attributes. The authors also suggest that an integrated platform model where location services are packaged into a single software product by network operators provides the best, most consistent service to customers while simultaneously enabling operators to retain these customers. This informative chapter provides a useful overview of the LBS industry, including revenue and marketing issues for software vendors and network operations as well as future industry trends.

**Chapter 16.** Some of the most advanced applications for mobile commerce exist in the use of mobile technologies in the ultimate mobile device, the automobile. Car-based computing platforms, collectively referred to as "telematics," generally provide a variety of information services such as automatic

and manual emergency calls, roadside assistance services, GPS, on-board diagnostics, traffic and dynamic route guidance, Internet communications, and personal concierge services. In “Mobile Commerce in the Automotive Industry – Making a Case for Strategic Partnerships,” Solak, Schrauben and Tanniru provide a case study of a telematics application. The chapter provides an analysis of the telematics market and related business opportunities. An important conclusion of this interesting chapter is that there is a risk that divergence in the industry away from common standards and technologies will lead to increased complexity and poor consumer acceptance; therefore, industry partnerships are critical to enable the telematics industry to succeed.

**Chapter 17.** As noted elsewhere in the book, an important use of mobile commerce is to raise awareness about a product or service in the minds of consumers. The aim of “The Role of Mobile Advertising in Building a Brand” is to discuss how mobile advertising can be used for branding in a cross-media promotion. To do so, Minna Pura presents a case study where mobile advertising was used as an integral part of the cross channel media mix. The case describes how Eera Finland planned and produced a mobile advertising campaign for TUPLA, a Finnish chocolate bar, that was tied to the premier of the movie “Tomb Raider.” The promotion focused on activating the target group, the youth segment, into offering information about themselves to the company. The goal, of course, was to identify whether and how this information could be used for future customer relationship management and to identify whether the promotion helped in product branding. The research described in this chapter represents an interesting example of using multiple media and promotional tools to increase consumer awareness and track customers.

**Chapter 18.** While the bulk of interest in mobile technologies by industry players is focused on business operations and consumer marketing, there is quite a bit of interest in using mobile technologies in support of education. For example, several universities and community colleges have developed fairly extensive wireless networks so that students and faculty can access Internet resources seamlessly across their campuses. This chapter, “Wireless in the Classroom and Beyond” by Jay Dominick, provides an overview of the author’s experiences and observations about the use of wireless computing at Wake Forest University. Wireless is used at Wake Forest not only for supporting faculty in the classroom and students in their studies, but also for supporting the management and operation of the entire academic enterprise. Part of the reason for the popularity of mobile computing in education appears to be that this mode of computing seemingly fits well with the mobile lifestyle of today’s computer-savvy student population. As with any business operation, however, the implementation of a wireless network necessitates thorough planning, requirements determination, and user involvement. While fo-



cused on education, many of the insights presented by this CIO will be applicable to a variety of other organizations and businesses.

## CONCLUDING REMARKS

We should note that all of the chapters were reviewed by either the editors or by external reviewers via a blind review process. For chapters submitted by the professionals working for firms in industry, we as editors reviewed and, where appropriate, made recommendations regarding content, scope, and direction. For chapters submitted by academic researchers, papers were submitted to external reviewers who did not know the authors' names or affiliations. In this way, papers were given a thorough scrutiny by experts in the fields of mobile and electronic commerce. In total, we were quite selective regarding actually including a submitted chapter in the book; for example, although we received 34 chapters, we only accepted 18 of the submissions for inclusion in the book. We are delighted to present this book to you and are proud of the many outstanding chapters that are included herein. We are confident that you will find it to be a useful resource to help your business, your students, or your business colleagues to better understand the topic of mobile commerce.

## REFERENCES

- Cherry Tree & Co. (2000). *Wireless Applications and Professional Services*, November, pp. 1–25, [www.cherrytreeco.com](http://www.cherrytreeco.com).
- Choi, S. Y., Stahl, D. O., & Whinston, A. B. (1997). *The Economics of Electronic Commerce*. Indianapolis, IN: Macmillan Publishing.
- Durlacher Research Ltd. (1999). *Mobile Commerce Report*, pp. 1–67, [www.durlacher.com](http://www.durlacher.com).
- Tarasewich, P., Nickerson, R. C., & Warkentin, M. (2002). Issues in mobile e-commerce, *Communications of the Association for Information Systems*, 8, pp. 41–64.
- Varshney, U., Vetter, R. J., & Kalakota, R. (2000), Mobile commerce: A new Frontier. *IEEE Computer*, October, 32–38.