Chapter 1
Managing IT in a Digital World

Objectives

Chapter 1 sets the context for studying the management of information technology in an increasingly digital world. The overall objective of this chapter is to motivate the course content. An overall theme of the text is that IT is a strategic enabler and the management of IT is a responsibility of not only IS leaders and IS specialists, but also IT-knowledgeable business managers.

Virtually all of today’s students are experienced users of personal computers and handheld communications devices. Many already depend on the Web not only for information, entertainment, and perhaps shopping and online banking, but also social networking as well. Graduate students may also have already had an introduction to IS management concepts in their undergraduate programs as well as, of course, firsthand experiences with information systems designed for organizational settings.

We therefore begin the chapter with recent IT trends in computer hardware, software and networks. This sets the stage for the in-depth discussion of these IT components in the first two chapters of Part I.

The sections that follow are designed to introduce students to the roles of the IS function in organizational settings. We briefly introduce how IT is being used by organizations to lower costs as well as differentiate its product and/or service offerings. IT has also enabled new ways that people work and live, and we introduce the concepts of telecommuting and virtual teams.

Then we introduce students to three broad categories of IT resources that need to be managed in organizations, based on the three IT-asset framework of Ross et al. (1996): the technology infrastructure, the IS human resource, and the business/IT relationship. The relationship asset discussion reinforces the importance of strong working partnerships between business and IT managers—which is a core theme throughout the textbook. We also introduce here the CIO role and provide a generic organization chart to help students begin to understand the scope of the executive leadership role.

This chapter therefore sets the stage for the remainder of the text, which includes 14 subsequent chapters and supplemental case studies organized into four parts:

- Part I of this textbook focuses on fundamental concepts and terminology, as well as IT industry trends, for the basic IT components that IT-savvy business managers will need to be familiar: computer systems (hardware and software), networks, and data.
- Part II provides in-depth descriptions of three different categories of software applications used by today’s organizations: enterprise systems, managerial support systems, and e-business systems that leverage the Internet.
- Part III presents methods and techniques for developing and implementing applications and managing IT projects; separate chapters are provided for basic systems concepts, custom-developed systems, purchased package solutions, and managing IT projects.
- Part IV focuses on the strategic planning of IT resources and the range of responsibilities of IS leaders, followed by separate chapters on information security practices and the broader IT-related social, ethical, and legal issues.
Teaching Suggestions

To help students understand how IT capabilities have evolved in recent decades, we have found it useful to ask students to think about how they used IT (for personal, educational, and/or professional activities) several years ago versus how they are using computers and communication networks today. If you have non-traditional undergraduate or master’s students, it is possible that they may also remember pre-Internet computing solutions as well as the need to have access to land lines and hard-wired networks for communications. The textbox with “mispredictions” by IT industry leaders sheds light on the difficulties of forecasting the potential impacts of technology innovations.

For graduate-level students, we have also used the Harvard Business Review article by N. Carr published almost a decade ago in May 2003, which questions the value provided by IT. Its title (“IT Doesn’t Matter”) can be used to set up a debate for or against the views of Carr. [Note: The “Letters to the Editor” published in the subsequent HBR issue in June 2003 provide some strong alternative arguments.] Our own experience is that if the faculty member does not preempt the debate with his/her own opinions, or emphasize the perceived status of an article published in the HBR, the students in the class will indeed be split on the issue. As we go to press, the award-winning, partly fictional, movie on the rise of Facebook (Social Networking) also provides a glimpse into Web-based startups today and can also be used to help students understand the dot-com frenzy in the U.S. by the late 1990s.

One approach for motivating the technology chapters (in Part I of the text) is to split the class in half, give everyone some answer cards (e.g., A, B, and C) and then ask multiple choice questions on hardware, software, and network innovations that they may be familiar with as individuals (such as the first Web browser, Smartphones and app stores, broadband options, etc.). All students hold up their own answers, the correct answer is revealed, and those that get the answer right are the team “survivors” for the next question. The team with the most survivors at the end of the game is declared as having the most “digital literacy” or something equivalent.

News stories on IT topics and the IT industry (in print or Web-based) can also be used to help motivate the course content. Students will also be introduced to the idea that they can easily advance their IT knowledge by continuing to read articles written for a general business audience about emerging technologies and IT industry developments not only during this course, but after this course has ended. Keeping up with new IT-related business opportunities is a responsibility of every manager, both business managers and IS managers. News sites for IS managers (such as cio.com) and professional organization Web sites may also be introduced at the first class meeting as useful resources.

It is also important to emphasize how managing IT in organizations (i.e., the role of information systems departments) has become much more complex over the past decade. The description of the 3 types of IT resources can be used to emphasize the importance of not only technology and IS professional resources, but also fostering strong business/IT relationships. Another approach is for students to brainstorm about what is needed to support sales employees and other workers who are “anytime, anywhere,” to coordinate workers in widely dispersed buildings, to have the organization’s public Web site for sales and service available 24/7 (24 hours a day, 7 days a week), and to keep track of what others are posting about an organization’s products or services on social networking sites with millions of users.

The Midsouth Chamber of Commerce (A) case study that immediately follows Chapter 1 sensitizes students to what can happen when a well-meaning business manager is the champion for the purchase of an information system, but there is no formal project team for acquiring and implementing new software that affects multiple functions. Because this case takes place in a very small organization, it is easy for these management issues to be brought out—but this type of management issue is also common in other
organizations. This case can also be used to illustrate the difficulty of managing IT resources without a strong IS leadership role. The Midsouth case can also be used as a common point of reference for subsequent chapters on purchasing software packages (Chapter 10), IT project management (Chapter 11), and IS leadership responsibilities (Chapter 13).

**REVIEW QUESTIONS**

1. Define what is encompassed in the term *information technology*.

We define *information technology (IT)* as computer technology (hardware and software) for processing and storing information, as well as communications technology (voice and data networks) for transmitting information.

2. What are some of the ways that IT has become "pervasive"?

IT has gone beyond extending communication channels within organizations. We see online stores, Web-based customer service offerings and the like as new offerings to retain competitive advantage. We also see that with the increased ease of access to the information and enhanced communication tools, workers are less constrained with time and location in their productivity. As stated in the text, work teams may never meet face-to-face and regularly use meeting software and video conferencing. Workers may choose a BlackBerry, iPhone, or other Smartphone to access office e-mail "anytime, anywhere." Similarly, virtual teams can be formed from geographically dispersed members, now with commonly used tools for online meetings that also facilitate document sharing.

3. What kinds of portable IT help employees work more efficiently and effectively? What may interfere with productivity?

Portable computers (such as laptops and smart phones) and high speed wireless networks from public transportation, airports, and even from in-flight airplanes keep employees productive.

IT also reduces the barriers to information access as well as information creation. The challenge then becomes accessing the “right” information. Excessive amounts of information available to workers may require them to find the signal in the noise. This can be challenging, and time consuming.

4. What kinds of IT can help support teams when team members work at different locations?

Meeting software and video conferencing can support virtual teams. The most basic kind of IT for supporting virtual teams is communication technology that facilitates the transmission of information among the team members. This may include smart phones with Internet connectivity. Additionally, many organizations provide remote access to important information resources for employees in many locations. [Note: This is made possible by improvements in authentication software and other new security tools.]

5. How have some businesses used the Internet to compete based on low cost, product/service differentiation, or both?

*Low Cost:* The Internet can increase a company’s “reach” to new customers and new suppliers, who may even be on different continents. Example: Airline companies now have a direct channel to consumers and business customers, which means they don’t have to pay travel agents or online intermediaries to sell all of their tickets.
Product/Service Differentiation: Example: Amazon was one of the first to develop a different user experience as part of its service offering. Web sites can also be programmed to display screens using a different language and different currency, depending on the user's browser location or selected preferences.

Low Cost and Product/Service differentiation: Airlines and other organizations have offered cheaper pricing for online purchasing, as well as loyalty programs with rewards of different types for online customers. For manufacturing businesses with business customers, lower prices can be offered depending on the customer relationship; some customers may be offered access to the manufacturer’s manufacturing quality and inventory data.

6. What kind of a business might choose to have low levels of dependence on IT?

Some organizations may still use IT primarily for back-office support but rely heavily on person-to-person communications to operate their business. Professional service organizations in particular may choose to keep their front-office person-to-person communications, and law and medical professionals may choose to have minimal usage of information technology. [Note: For paper-based physician practices in the U.S., there are federal government incentives (HITECH Act passed in 2009) to become more digitized, including electronic transmission of patient data for referrals and lab tests, etc.]

7. What three types of IT resources need to be managed well?

The textbook emphasizes three resources (based on Ross et al. 1996):

- Technology Infrastructure
- Human Resources
- Business/IT Relationships

8. What are some examples of newer IT manager roles, and why are they needed today?

CSO (Chief Security Officer): To plan for and monitor compliance with new federal laws and reporting requirements and to ensure that appropriate investments are made in technologies and procedures to manage IT security risks.

Middle Manager roles for outsourcing: To help ensure that contracts with key outsourcing suppliers have successful outcomes

9. For what reasons might an IT manager have a reporting relationship with a CIO as well as with a senior business manager?

This dual reporting relationship helps ensure that the IS department’s resources are well aligned with the business; it is one approach to establishing and maintaining a strong business/IT relationship.
Discussion Questions

1. Provide an example of how a business function with which you are familiar (e.g., sales, marketing, finance, operations/production, accounting, human resources) utilizes IT for operational and/or strategic purposes.

For example, an international convenience store chain automated its in-store job applications for its HR department. An online system allows the store chain to accept job applications in the stores via kiosks that are connected to the central HR system at headquarters. The applications are then automatically routed to the responsible HR manager to review based on job openings, job descriptions and review rules set forth by the HR department.

2. Describe some ways that you personally use information technologies differently than you did just a few years ago.

A possible student answer: Smart phones and global positioning systems make travel a lot easier in unfamiliar locations. I stopped using printed maps more than a few years ago, and now don’t even have to get the directions based on a starting point. Instead, with consumer electronics I can get ad hoc directions to a final destination based on my current location. I also rent all my movies online by either using streaming technology or having the DVDs mailed to me. All my personal documents are stored “in the cloud” so that they are constantly backed up, and more importantly, I can access them with multiple personal devices.

3. Some organizations purposefully select a CIO that has strong business management backgrounds, not just technical experience. Under what organizational circumstances do you think this might be an effective choice?

A CIO with a strong business management background may be a better choice for organizations where IT is beginning to be used for competitive advantage and/or the business is rapidly changing. In organizations less strategically dependent on IT, or competing in the IT industry, a leader with a strong technology background may be preferred. [Note: There are several recent articles on different types of CIO roles and factors that can influence the choice; for example, see two research articles in the March 2011 issue of MIS Quarterly Executive.]

4. Describe a new business for which you think a "virtual organization"—which has no physical office or headquarters—could be an effective design. What are some ways that the organization could use IT to help them effectively run their business?

Service organizations are generally the best candidates for being “virtual”—as well as smaller organizations. Video conferencing, desktop sharing and other collaboration tools can be used for synchronous communications. Web based portals with appropriate security and cloud computing options provide access to organizational data.

5. Would you like to work as a free agent? Why or why not?

Working as a free agent in the early stages of one’s career is a great opportunity to learn about different organizational contexts and industries. Free agents also have greater flexibility in their choice of location since they are more likely to be telecommuting. However, as one’s career develops, job security and concerns about healthcare and other employee “benefits” can take precedence.
6. Using the Internet, identify what is meant by the term **digital divide**. What actions do you think could be taken to lessen this divide—both within your own country and elsewhere in the world?

This term refers to large numbers of “have not’s” with no access to computers and modern communications. As the cost of computer hardware has decreased and wireless network access has increased, more people have access to information technologies. However, the technology with the greatest impact on the “digital divide” has been the cellular phone, including those with texting capabilities.

7. Identify some Web sites for publications that could be useful supplementary resources for studying some of the IT topics in this textbook.

   http://www.computerworld.com
   http://www.cio.com
   http://www.itprc.com/publications.htm
   http://esi.com
   http://www.b2bpublications.com
   http://www.business.com/directory/computers_and_software/computer_services/information_technology_IT_services/reference/publications
   http://www.intelligentedu.com/pubs.html
Teaching Note on Case Study 1
Midsouth Chamber of Commerce (A):
The Role of the Operating Manager in Information Systems

Objectives

Midsouth Chamber of Commerce (A) is based on an actual situation with only cosmetic changes made to protect the identities of the organization and the individuals involved. This case describes the complex and often chaotic process of implementing information technology change in an organization with conflicting objectives.

The primary objective of this first case in the book is to examine the role of the business manager in the management of information technology in organizations (in this case, the implementation of a new software system).

Secondary objectives of this case include:

1. Illustrating some of the possible roles business managers may play in the implementation of information technology.
2. Demonstrating some of the pitfalls that a business manager may encounter as technology is introduced.
3. Illuminating the role of the technology provider—in this case the software vendor.
4. Revealing the importance of information systems (IS) politics.

Overview

The Midsouth Chamber of Commerce (MSCC) was a growing, aggressive, statewide chamber of commerce that had historically benefited from its strong leadership. One example of its leadership was Leon Lassiter, the Vice President of Marketing at the MSCC. Early in his tenure, Lassiter realized that the MSCC needed to acquire new software in order to provide the enhanced sales and marketing support he felt was necessary for his department and the MSCC to be truly successful. As a result, Lassiter became the champion for acquiring a new software system, in particular a system developed by the Unitrak Software Corporation simply called Unitrak. After Lassiter successfully convinced the Executive Committee of the Board of Directors to authorize the purchase, the real problems began for the MSCC.

While Lassiter had been the champion for the purchase of the software system, he was not in charge of computer operations nor was he able to garner cooperation from the main individual who was in charge, Jeff Hedges, the Vice President of Public Finance. Furthermore, the systems analyst, Simon Kovecki, proved to be a weak resource for the Chamber as he was both inexperienced and upset that he was not appointed manager of computer operations when Hedges was given the role of running the MSCC’s information technology organization.

With animosity developing throughout the organization, Kovecki, in particular, pulled away from the project and provided very little support in the early stages of Unitrak’s installation. Even after he became more involved, the MSCC began to experience additional technical problems that
neither Unitrak nor Kovecki could solve. And, while Unitrak did assist in the training, the firm provided very little help during the attempted data migration between the systems. So, by the time Lassiter stepped in to champion the project, he was forced to do so without the support of key players within the MSCC. As this case closed, the old system had been rendered essentially inoperative after Kovecki’s failed attempt at migrating the data to the new system. As a result, the MSCC was left with no computer support for its operations, and the organization needed solutions quickly to prevent additional operations from stalling.

Questions for Discussion

1. Identify the key players in the case and describe their respective roles. Are these the right roles? What roles in particular should be modified? How might such role modifications be accomplished?

Key Players and Roles

- **Leon Lassiter—Vice President of Marketing of the MSCC.** Lassiter was a high-ranking business manager, with no information technology background, who recognized the need for a new software system at the MSCC and acted as its champion during the acquisition (and eventually the implementation) process. In his short tenure, Lassiter had proven to be a very strong marketing manager for the MSCC, but he was nevertheless unsuccessful in getting more appropriately positioned people involved in the implementation of the new software system. This forced Lassiter to serve as the champion of the project throughout the entire process—a role that he was unqualified to perform.

- **Jeff Hedges—Vice President of Public Finance of the MSCC.** Hedges was the leader of the MSCC’s tiny computer operations section. Given the bulk of tasks he had before him, Hedges was not significantly involved in the new system’s implementation. Generally speaking, Hedges appeared to look at his computer responsibilities at the MSCC as a secondary duty—a fear that Kovecki had when Hedges was named to this position.

- **Simon Kovecki—Systems Analyst at the MSCC.** Kovecki—a young computer science graduate with no experience in a membership organization or with administrative software—was the only IS professional inside the MSCC. Kovecki spent his first three months at the MSCC learning not only the organization but also the computing systems—without the benefit of any systems documentation. Nevertheless, Kovecki was able to have the old system running reliably. His cursory involvement during the early stages of the new system implementation process, though, got Lassiter’s project off to a slow start. His lack of involvement was due to two issues—(1) Kovecki not receiving the responsibility for leading the MSCC’s computer operations, and (2) Kovecki’s distaste for the features of the software package chosen. Unfortunately, once Kovecki finally did become involved in the project, he was unable to make the new system operational.

- **Ed Wilson—Vice President of Public Affairs and Operations of the MSCC.** Before his reassignment, Wilson had been in charge of computer operations and had actually introduced the MSCC to the world of microcomputers and database management. While Wilson and Lassiter did not have a strong relationship at first, eventually the relationship became amicable, and Wilson provided Lassiter with some support during the Unitrak acquisition process. Overall, however, that was the extent of Wilson’s involvement in this process.

- **Jack Wallingford—President of the MSCC.** While Wallingford was the President of the MSCC, his involvement in this decision and the system implementation was negligible.

- **Executive Committee of the MSCC.** While this group made the ultimate decision to purchase the Unitrak software, they did not appear to have followed up on this purchase
during the implementation process. Additionally, their decision to support the Unitrak system may have been too quick and based too much on Lassiter’s input instead of the due diligence one would expect from this group.

- **Greg Ginder—President of Unitrak Software Corporation.** Ginder made considerable concessions in order to sell his company’s software to the MSCC including unlimited support during the system installation. Nevertheless, when the MSCC needed Unitrak the most—during the system migration and conversion process—Unitrak’s support was missing or ineffective.

### Role Modification

Clearly several of the roles discussed above should have been modified. Neither Hedges nor Kovecki—the two most important IS players at the MSCC—were meeting their job responsibilities, and Lassiter proved inept at gaining their cooperation or improving their effort level. At the same time, Wallingford and the Executive Committee should not have remained aloof in the face of the crisis that was upon the MSCC and could have played a larger role in getting Hedges and Kovecki’s attention. Furthermore, while Ginder did provide some support for the MSCC, it was not at the level or in the amount that a reputable software vendor should provide.

How to implement these role modifications is a more difficult question. Hedges or Kovecki may not have had the expertise to perform their job descriptions and may have simply needed to be replaced. Generally, however, Lassiter did a poor job of playing IS politics and may have been able to avoid this entire situation by doing a better job with IS politics. As an example, as mentioned above, Lassiter could have gone to Wallingford to request help in garnering the support of Hedges and Kovecki. Furthermore, depending upon the software contract, Ginder’s support might have been more forthcoming during the critical stages of implementation had legal action been threatened.

### 2. Focus on the role of the software vendor—Unitrak Software Corporation. Was it an appropriate role? Did Unitrak act responsibly?

This question was partially answered in question 1 above. Unitrak certainly did not act responsibly during this entire scenario. Whether Unitrak was legally at fault depends upon the terms of the software contract, which were not presented in the case. It is reasonable to assume, however, that such a contract would have included specific assurances for Unitrak to meet that would include an operational system—something the MSCC did not have when this case closed. One would hope that Ginder’s promise to provide “unlimited support at no charge to install the system” would have been in that list of assurances/warranties. If so, Unitrak would have opened itself up to legal action.

Furthermore, when the MSCC was at a critical phase—the data migration step—Unitrak was “missing in action.” For a company that had a stated goal of penetrating the chamber of commerce market, this act appears to be working against its own interests. While neglecting any customer is a sign of concern, neglecting a key component for a company’s business growth and development is that much more inexcusable.

### 3. How much is Kovecki to blame for this situation?

While most students tend to put much of the blame on Lassiter, Kovecki is also a key component to this problem. Clearly company politics played some role, but Kovecki failed to perform some
of the basic pieces of his own job description by, as one example, failing to provide support in the early stages of this process. From a technical standpoint, too, one would never migrate data on a system without first performing a system backup—a move that Kovecki failed to make. This failure has to make one question whether Kovecki’s technical skills were as strong as they may have at first appeared. When coupled with the high likelihood that the software had a serious internal problem, however, Kovecki was in a no-win situation by the time the data migration occurred. One could argue, however, that he had placed himself in that position by failing to be more involved in the process from the beginning.

Nevertheless, politics played a significant role in this scenario, as Lassiter and Kovecki needed to work closely during this process and that was not possible due to the animosity that had built up between them and between Kovecki and the organization—because he had been passed over for a position that he was clearly more qualified to perform than the person given the job. As Kovecki pulled away from his position and the MSCC, the organization’s IS began to fall apart.

4. One of the recurring themes of this book is the importance of information systems politics. To what extent does IS politics explain the situation that has developed at the Midsouth Chamber of Commerce?

IS politics helps explain much of the MSCC’s situation. The new system was Lassiter’s idea, and he was unable to “sell” the system to either Hedges or Kovecki, the two people who were critical to the system’s ultimate success. As such, Lassiter went over these individuals’ heads, and the system became Lassiter’s system, not their system, or even the MSCC’s system.

Furthermore, when Lassiter initially proposed the new system to the Executive Committee, it was pushed through, but likely as the result of respect for Lassiter rather than because of reasonable due diligence. After the project did not make progress for a few weeks, Lassiter began to ask questions. Hedges then told him to simply push the project through himself because it was “his project.” As he did so, several staff members expressed concern that they had not been consulted or informed of the idea before its approval. And as a result, with no one having ownership of the system and no buy-in from any of the other executives in the MSCC, the animosity level rose and the excitement about the new system was drowned out by it.

5. The case involves what appears to be a fairly routine use of information technology to support a service organization. Yet the Midsouth Chamber of Commerce encountered major problems in bringing up its new system. Is there a lesson here for organizations seeking to adopt new information technology? What is it?

What appears to be a routine application of information technology to an organization with an experienced, knowledgeable IS staff may be anything but routine to an organization lacking IS skills in its business managers. Certainly there is no way that the MSCC could have successfully adopted truly new information technology with its current level of internal IS knowledge and its apparent unwillingness to find that knowledge outside the company. By placing control of the information technology with someone who had little information technology background and was managing the process “on the side,” the MSCC lessened the opportunity for its information technology to provide a competitive advantage for this organization.

Therefore, the lesson to be learned from this case is that organizations should honestly and carefully consider whether they have a sufficient level of expertise before attempting to adopt new technology. Furthermore, an organization must have “buy-in” from all its executives before
making such a purchase. Even if a system works perfectly from a technical perspective, it will never reach its potential if management is not advocating its use throughout the organization.

6. What should Lassiter do now?

Lassiter must immediately focus on making the conversion process work. With both the new and the old systems down, Lassiter has two choices: outsource the MSCC’s IT needs to an outside vendor or create an ad hoc paper system in the interim. A paper system is likely not going to work for long. At the same time, it will take Kovecki (or his replacement if fired) time to get the system up and running without help or viable documentation. As a result, Lassiter must also look outside the company to find Kovecki some additional help—perhaps from another company that uses and/or has had some experience with the Unitrak system.

Finally, Lassiter needs to pull the entire management team together, explain the situation, and reintegrate them by inquiring about suggestions on how to proceed. He also needs to ask them to inform their staff of the situation and the steps being taken to correct the situation. By doing this the staff might become less disgruntled with the system’s inoperativity in the short term.