

Chapter 1 INTRODUCTION

Learning Objectives

After completing this chapter, you should be able to:

Define and describe “e-commerce.”

Define and describe “operations management.”

Define and describe “e-commerce operations management.”

Explain why e-commerce operations management is important for business success.

Overview Of This Chapter

This chapter introduces and defines some of the principle terms that will be used throughout the book. This chapter also tries to help justify why the subject of this book is an important for students of business. The chapter ends with an overview of the book’s architecture used to organize the material for student learning purposes.

What Is E-Commerce?

Origin of the Term

The need for more timely information leads to the development of world’s largest and most widely used networks, called the Internet. The *Internet* is an international collection of hardware and software from hundreds of thousands of private and public computer networks. It represents a global platform that permits digital information to be shared and distributed at very little cost to users. The Internet provides a wide range of information interaction functions, including: communication (i.e., sending e-mails, transmitting data, etc.), accessing information (i.e., searching databases, reading electronic books, etc.), and supplying information (i.e., transferring files, graphics, etc.).

It is no wonder that people of commerce quickly saw opportunities in using the Internet to conduct business. The universality that the Internet offered had to

be and was capacitated by businesses into universally accepted standards for storing, retrieving, formatting, and displaying information in a networked environment. This capacitated environment of the Internet is called the *World Wide Web* (WWW) and permits businesses to get online and conduct a variety of business activities. Tim Berners-Lee of the European Laboratory for Particle Physics was credited in 1990 with developing several protocols used in the initial development of the WWW (Deithel, *et al.* 2001, p. 12). One example of the use of the WWW standardization capacity is the use of Web sites in conducting business transactions. It is this capacity of the WWW that allows users of a computer over the Internet to locate and view multimedia documents such as text, graphics, animations, and videos that make up Web sites. As the use of the WWW matured during the 1990's, new terms emerged to more accurately differentiate the different types of business transactions that were taking place over the Internet. One of these new terms was called "electronic commerce" hereafter referred to as "e-commerce."

E-Commerce Definition

E-commerce is the exchange transactions which take place over the Internet primarily using digital technology. These exchange transactions include buying, selling, or trading of goods, services, and information. This encompasses all activities supporting market transactions including marketing, customer support, delivery, and payment. The term, *brick-and-mortar business*, is often used to describe traditional or regular business commerce (i.e., non-e-commerce) exchange transactions.

As we can see in Table 1, there are at least nine different categories of e-commerce (Wood 2001, pp. 1–6; Laudon and Laudon, p. 110; Balasubramanian and Mahajan 2001). The customer can sell items directly to other customers (e.g., like the C2C eBay online auction business that allows people to auction items they own to other people directly), or as a C2B organization where online registrations can be performed for products consumers purchase, or as a C2G organization where individual voters in the United States can contact their governmental representatives directly over the Internet. The B2C organizations are now able, through online registration, to keep better track of their customers for purposes of product recalls and product updates. The B2B organizations can transact product and material purchases, share design specifications for new products, and perform research and development activities all online. The B2G organizations allow businesses to fulfill government obligations on reporting their behavior on such issues of environmentalism, taxes, and legal actions in a

timely manner. All of the G2C, G2B and G2G organizations can share information required by law and current legislation that might otherwise take years to convey. These governmental organizations allow for a much needed expedience in the dissemination of information concerning the governance of people and assurance that laws will be promptly obeyed.

Table 1. Categories of e-commerce

From	To		
	Customer	Business	Government
Customer	Customer-to-Customer (C2C)	Customer-to-Business (C2B)	Customer-to-Government (C2G)
Business	Business-to-Customer (B2C)	Business-to-Business (B2B)	Business-to-Government (B2G)
Government	Government-to-Customer (G2C)	Government-to-Business (G2B)	Government-to-Government (G2G)

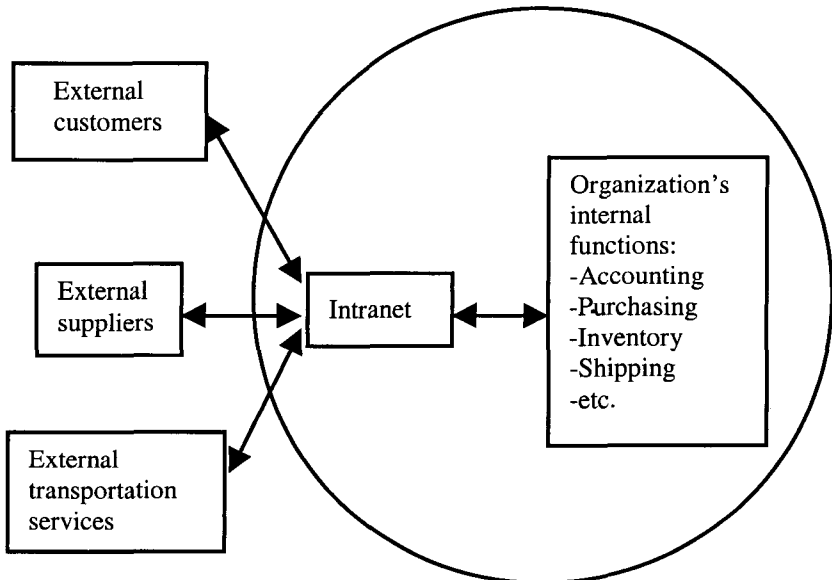


Figure 1. Intranet and extranet

This book takes a very broad view in its definition of e-commerce exchange transactions to include all information sharing that supports business transactions. This would include all transactions internal to the business organizations and those external with customers and government agencies. Also, it incorporates the term “electronic business” or hereafter referred to as “e-business.” *E-business* describes the uses of the Internet and digital technology for the management of business processes internal to the organization. The use of *intranets* (i.e., networks within a single organization) as shown in the circled area in Figure 1 are also included in e-commerce. They link internal organization functions together for efficiency, timeliness, and issues of privacy within the firm. As intranets are expanded to include external organizations (e.g., suppliers) as authorized users of an organization’s intranet, they create *extranets* which are also included in the definition of e-commerce in this book.

What Is Operations Management?

Operations Management (OM) can be defined as the design, operation, and continued improvement of the system that creates and delivers a firm’s products and services (Chase *et al.* 2001, p. 6). It is viewed primarily as a line management function, equal in standing, organizationally, to accounting, marketing, finance, and information systems. As a management function, OM involves all of the basic management tasks of planning, directing, organizing, staffing, motivating, and controlling.

The primary objective of an OM manager is to manage and control the “production process.” The *production process* presented in Figure 2 involves taking inputs (e.g., raw materials, human resources, etc.) and transforming them, using technology, processes, and rules, into consumable outputs (e.g., finished products or services) in the most efficient and effective manner. To do this OM managers must perform a variety of tasks. These tasks include, among other things, managing product and service quality, forecasting demand, managing inventory, scheduling production, purchasing goods and services, managing the supply-chain of an organization, aiding in the design and development of products, and managing human and technical resources. OM managers must also control the transformation process and allow for corrective feedback to make sure they are achieving organizational goals. Since OM also involves improving operating systems, additional tasks might include reengineering jobs or processes and working with consultants to alter existing systems for improved efficiency and productivity as changes in technology or markets demand.

Table 2. Types of e-business models

Type of model	Description
Advertiser	Company makes money by selling advertising space on their Web site. The Advertiser then lures target audience by giving them some free service or information. Many companies who maintain a Web site have started using this type of model as an extra source of e-commerce income.
Service	Company creates a Web site that offers customers a service or range of services. Online brokerage houses, travel agencies, etc. are typical examples.
Virtual mall	Company offers a wide range of differing manufactured products on a Web site. One of the most typical examples is AMAZON.COM.
e-tailing	Company can offer a single customized product, like Dell Computers which offers a customized computer system over the Web. They can also offer non-customized products like brand-name appliances.
Information disseminator	Company offers up-to-date source of information of a specific nature. An example would be an online newspaper from a specific city or covering a specific type of news.
Sales facilitator	Company connects buyers with sellers on a Web site that attracts customers with the promise of finding an inexpensive source for the product or service they are looking for while selling access linkage to the seller's site.
e-procurement	Company provides efficient and cost reducing linkages between buyers and sellers of industrial organizations.

While there are many other tasks that OM managers may be asked to perform, those listed in Figure 2 are considered by most OM managers as basic, fundamental, and critical factors necessary for a successful operation. When a task becomes so important that it can determine the successfulness of an organization, it becomes what is called a *critical success factor* (Laudon and Laudon 2001, p. 307). As we will see in Chapter 2, these critical success factors (CSFs) must be included in the development of strategies for successful business operations. Indeed, the rest of this book is devoted to learning how these CSFs can be incorporated in e-commerce operations. While these tasks have been performed by OM managers for many decades, e-commerce is viewed as a revolution, altering how they can and should be performed. This revolution is called “e-commerce operations management.”

What Is E-Commerce Operations Management?

E-commerce operations management is the application of all operations management tasks applied in an e-commerce setting. It is the combination of the use of the Internet and digital technology to perform the basic OM activities necessary for the successful running of a business. It involves all the typical OM activities (i.e., purchasing management, inventory management, etc) but focuses on managing an e-commerce operation. This includes firms whose business model is completed based on e-commerce transactions and those that are a combination of brick-and-mortar and e-commerce operations. It is not limited to individual or singular e-business models presented in Table 2, but also includes integration of aspects of e-business models that are combined with regular business operations to help make a modern organization successful. Indeed, it is the advocacy of this book that organizations which can successfully integrate brick-and-mortar with e-commerce operations will be the market winners.

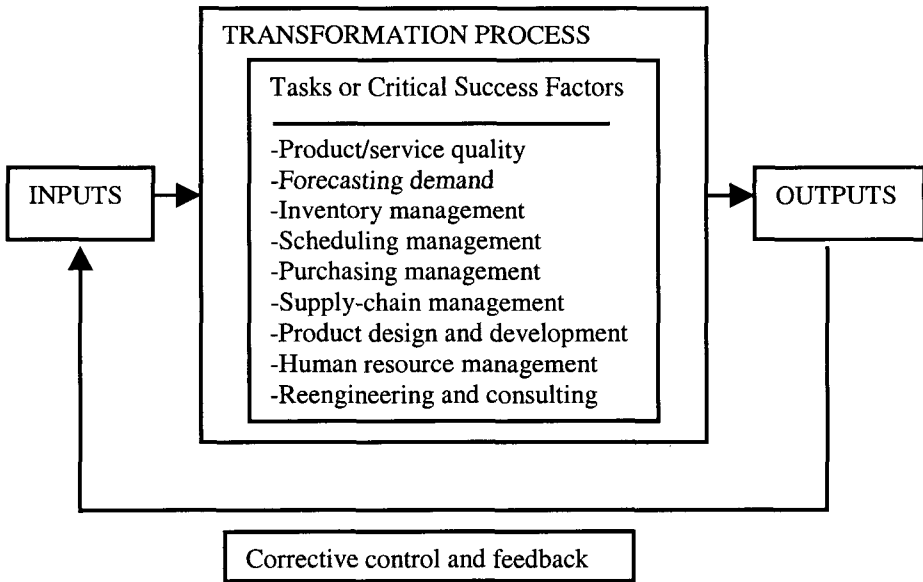


Figure 2. OM production process

For the purposes of this book, the definition of e-commerce does have some limitations. What e-commerce operations management does not include are activities performed by other functional areas in a business organization. While “e-commerce” includes the marketing functions of advertising, promoting, and selling, and accounting and finance functions, including activities such as account management, cash flow, investment, and capital budgeting, these activities are not directly part of the “e-commerce operations management” definition that is more narrowly focused on the OM function. While accounting, finance, and marketing each play critical roles in the successfulness of an e-commerce operation, they are simply not the subject, that will be covered in this book.

Why Study E-Commerce Operations Management?

The introduction of the Internet into activities performed by OM managers required change in virtually everything an OM manager is asked to do. Even if a brick-and-mortar firm chose not to use any of the e-business models, they must interact with firms that do. Hence, e-commerce operations management is not a free choice decision, but a requirement of OM managers who want to be successful in modern business operations.

Fortunately, there are sizable benefits for those OM managers who embrace e-commerce operations and know how to maximize their production process. Some of the OM benefits are stated in Table 3 (Heizer and Render 2001, p. 460; Laudon and Laudon 2002, pp. 122–129; Kamarainen *et al.* 2001). OM managers are chiefly focused in their jobs on improving operational efficiency. This objective is usually accomplished by cutting costs of resources used in the production transformation process (note Figure 2) and the flexibility of an operation to adapt to changes quickly, thereby avoiding unnecessary increasing costs of not adapting in a timely manner.

While it is more of a marketing function consideration, the potential for new business that e-commerce offers organizations makes it a necessity for OM managers. One forecast has suggested that by the year 2004 more than 640 million people will be spending \$3 to \$4 trillion online (Enos 2000).

Of equal importance to both marketing and OM managers is the advantage e-commerce offers organizations to reduce overall costs by eliminating intermediaries in the distribution and retailing of products or services. A process Laudon and Laudon (2002, p. 111) refer to as *disintermediation* is achieved when intermediaries (e.g., distributors, retailers, etc.) are eliminated from the

operations and marketing functions of an organization. As can be seen in the simple example in Figure 3, the channel of distribution from the manufacturer to the customers can be reduced by offering customers the product the manufacturer produces directly. By cutting out the intermediaries in the distribution system, the costs the intermediaries normally would add (e.g., their profit, advertising, human resource costs, etc.) are saved. Mougayar (1998, p. 12) found that traditional brick-and-mortar distribution channels may add as much as 135

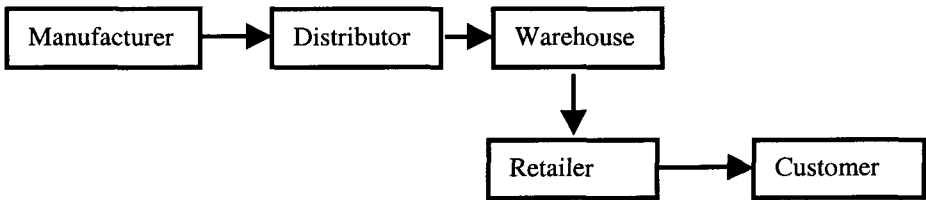
Table 3. Benefits of e-commerce

OM benefit	Explanation
Better availability of service	Conveniently allows customers to shop in their homes or anywhere online.
Cost reduction in information processing	Reduces costs of processing and retrieving order and customer information.
Better timeliness of service	Online operations can offer customers 24-hour service for purchasing goods and services.
Better access to customer markets	Online operations go everywhere in the world, opening new and larger markets than brick-and-mortar operations.
Initial cost of operations less expensive	The capital investment in e-commerce operations is considerably less than brick-and-mortar operations.
Operating costs of operations less expensive	The ongoing expenditure of running a virtual or e-commerce operation is less expensive than brick-and-mortar: less people, less physical equipment, less paper work, etc.
Better purchasing prices from suppliers	The nature of the competitive environment in e-commerce allows for more pricing information and results in lowering costs to producers.
Improved product development	The ability to be online with research and development people from around the world can help to reduce the time-to-market for new products and the cost of their development.
Improved scheduling	The online ability to keep track of product or service activities allows schedulers to be more accurate and timely in scheduling and rescheduling production activity, reducing costs.
Better supplier quality	The information driven environment in e-commerce allows purchasers to more easily learn about material and component quality in the items manufacturers acquire.

percent to the cost of the item over its original cost of manufacture. So, a product like frames for eyeglasses that might retail to a customer for \$100 using a traditional channel of distribution could be reduced with disintermediation to approximately \$42. Clearly, a cost competitive advantage can be achieved using an e-commerce approach to retailing products or services.



Flow of product without disintermediation:



Flow of product with disintermediation:



Figure 3. Disintermediation

How This Book Is Organized To Help You Learn

Structurally, the remaining chapters in this book all have common educational pedagogy designed to aid the reader in understanding the content material each chapter seeks to present. In addition to the basic subject content, each chapter includes the following seven sections: (1) Learning Objectives: Students should use these declarative sentences as a statement of what they can expect to find in the chapter and as a review tool after they have read the chapter to ensure they have attained the basic knowledge objectives of that chapter. (2) Overview of the Chapter: Students can quickly see in this section a brief statement on the chapter content that follows. This overview is helpful in organizing the content of the

chapter, since the content will vary considerably from chapter to chapter. (3) Summary: At the end of each chapter a brief summary of the chapter is presented to remind students of major points and on occasion discussion limitations of topics. (4) Review Terms: Throughout the book the terms are italicized and are restated here to remind students of important terminology. This listing also serves as a quick guide to abbreviations. (5) Discussion Questions: A set of discussion questions are presented as a means to stimulate ideas on content and further thinking. (6) Questions: These questions can be used as assignments by faculty or a self-testing check to see if students have learned the basic topics of the chapter. (7) References: All the references used for materials throughout the chapters are listed here. Students can use these reference citations to locate the publication and further their knowledge of specific content mentioned or referenced in the chapter.

This book's chapters are organized into two parts. Part I, "Introduction and Critical Success Factors in E-Commerce Operations Management," consists of two chapters. In Part I, Chapter 1, "Introduction," the basic definition of e-commerce operations management is presented. Creating a beginning foundation for what e-commerce operations management involves, this chapter's content is further refined in the following chapters. In Part I, Chapter 2, "Research on Critical Success Factors in E-Commerce Operations Management," the results of a very recent, extensive research study on e-commerce operations management are presented. This chapter identifies the critical success factors (CSFs) in running an e-commerce operation. Additional journal research is incorporated to contrast the ideas presented and clearly establish select CSFs as the major focus of the rest of the book.

In Part II, "Critical Success Factors of E-Commerce Operations Management," the eight chapters that round out the rest of the book are each devoted to an individual CSF identified in the prior research. These chapters seek to explain their application in e-commerce operations management. The CSFs are easily identified in each of the chapter titles: Chapter 3, "E-Commerce and Supply-Chain Management," Chapter 4, "E-Commerce and Product and Process Management," Chapter 5, "E-Commerce and Purchasing Management," Chapter 6, "E-Commerce and Forecasting and Scheduling Management," Chapter 7, "E-Commerce and Inventory Management," Chapter 8, "E-Commerce and Quality Management," Chapter 9, "E-Commerce and Human Resource Management," and Chapter 10, "E-Commerce and Reengineering and Consulting Management." These chapters' contents are based on the most recent research in their respective areas. They represent information on both "how-to" manage an e-commerce

operation and “what’s happening” in e-commerce. Collectively, they help to explain what is meant by the term “e-commerce operations management.”

Summary

This chapter presented basic definitions for a number of important terms that will be used throughout the rest of the book, including e-commerce, operations management, and e-commerce operations management. A variety of reasons why e-commerce operations management should be studied, including disintermediation, cost reduction, and efficiency in the production process were also presented. The chapter’s content ended with an explanation of how the book is organized for student’s use and understanding.

Like all introductory chapters, this one overviewed the basic organization of the book’s content. In doing so, it provided a preview of the results of research on CSFs that will be discussed in Chapter 2.

◆ Review Terms

Brick-and-mortar business	management
Critical success factors (CSFs)	Extranets
Disintermediation	Internet
E-business	Intranets
E-business model	Operations management (OM)
E-commerce	Production process
E-commerce operations	World Wide Web (WWW)

◆ Discussion Questions

1. Explain how the nine different categories of e-commerce in Table 1 are different from one another.
2. Explain why “e” precedes many of the terms in e-commerce.
3. Explain how a “Information disseminator” e-business model can make money for a business.
4. Explain why it is important to study “e-commerce operations management.”
5. Describe some of the benefits of e-commerce operations management.

◆ **Questions**

1. How many categories of e-commerce are there? Give an example for each.
 2. What is the difference between a virtual mall and an e-tailing type of e-business models? Give an example of each.
 3. How are intranets and extranets connected to e-commerce operations?
 4. What is e-commerce operations management?
 5. What are critical success factors? Give examples in operations management.
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