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Electronic commerce

J. Ohene-Djan

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Undergraduate study in
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This guide was prepared for the University of London International Programmes by:

Dr James Ohene-Djan

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University of London International Programmes
Publications Office
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Introduction to the subject guide

Electronic commerce (or e-commerce) has evolved over the years to become a major channel through which businesses can exchange goods and services, coordinate production and market to customers. By harnessing the power of the internet, electronic commerce has changed the way in which organisations conduct business. The ever-increasing sophistication of websites, intranets and extranets has led to advanced web applications being used to address the needs of customers.

Although the downturn in e-commerce activities at the end of the 20th century led to many new businesses failing, it has subsequently been followed by a second wave of e-commerce that is more international in nature, more dynamic in terms of business and revenue models, and more effective in terms of utilising internet services to address customer needs. Today organisations around the world are using e-commerce to satisfy their communication and business needs. This subject guide is designed to support you when studying the University of London BSc in Computing and Information Systems course unit Electronic Commerce.

The subject guide consists of:

- Extensive study notes on a complete course in e-commerce.
- A set of multiple choice, true / false and essay style questions on each topic covered in the subject guide.
- Sample exam papers to allow you to apply and test the skills and knowledge you have acquired.

In this introductory chapter, the following aspects of the course unit are covered:

- aims, objectives and learning outcomes
- the subject guide content and structure
- course textbook and further reading
- guide to effective study
- assignments and examination.

Aims, objectives and learning outcomes

Aims

The aim of this course is to equip you with a detailed understanding of the major issues regarding the use of electronic commerce applications within business organisations.

Objectives

This course unit focuses on the business, strategic and technical aspects of electronic commerce. It analyses the technologies used, the models designed to make use of such technologies, and the applications that have resulted from their deployment.

The objectives of this subject guide are:

- To define and develop an understanding of the nature, scope and use of electronic commerce applications.
- To define and develop an understanding of the role of internet technologies.
- To enable you to apply electronic commerce business models to real-world scenarios.
- To equip you with the necessary skills to analyse case studies and discuss important issues relating to the development of electronic commerce.
- To enable you to gain an understanding of how to design, engineer and implement electronic commerce applications.

- To equip you with an understanding of the security, legal and ethical issues related to electronic commerce.

In meeting these objectives answers are given to the following questions:

- What are the key differences between the first and second wave of e-commerce?
- What is the definition of electronic commerce and how is it used?
- What constitutes the technology infrastructure of the internet and the World Wide Web?
- What are the emerging Revenue Models and techniques for building a Web Presence?
- How are electronic commerce businesses marketing on the Web?
- What Business-to-Business Strategies are companies using to conduct electronic commerce?
- What is required to design and engineer Online Auctions, Virtual Communities, and Web Portals?
- What is required to design and engineer electronic commerce applications?
- What are the legal and ethical implications when using electronic commerce applications?
- What are the major security threats to electronic commerce businesses and their customers?
- What are the likely future scenarios for electronic commerce?

Learning outcomes

Having mastered the material in, and referenced by, this subject guide, you will be able to:

- Define and understand the nature, scope and use of a wide variety of electronic commerce applications.
- Define and understand the role of internet technologies in electronic commerce.
- Understand and apply electronic commerce business models to real-world scenarios.
- Analyse case studies and conduct online research into electronic commerce.
- Manage the design, engineering and implementation of electronic commerce applications.
- Understand and apply the security, legal and ethical issues that may arise when using internet technologies.

The subject guide

This subject guide is designed to help you learn. Like an interactive tutor, it will identify those issues that are important and the problems you will encounter as you study this course unit. This subject guide is in no way a substitute for the recommended course text-book which is detailed below. Rather, it aims to highlight particular areas of study and to provide you with supplementary study material to assist your learning.

The subject guide is divided into 10 chapters, each of which may be viewed as a distinct but inter-related area of study. Each chapter is supported by a set of student notes, short study questions, full chapter review questions and solutions. Each chapter also contains a set of discussion topics, case studies and online learning assignments.

The subject guide is divided into the following chapters:

1. Introducing electronic commerce

In this chapter, you will discover what makes electronic commerce different from more traditional forms of commerce, its advantages and disadvantages and how the international growth of the internet and the world wide web (WWW) have stimulated a global commercial environment now being exploited by firms engaged in electronic commerce.

2. Technology infrastructure: the internet and the world wide web

This chapter will give you a broad understanding of the internet technologies upon which electronic commerce, in all its forms, is based today. It will be an important foundation, since it introduces many of the concepts and ideas which will be discussed in greater detail later in the course.

3. Selling on the web: revenue models and building a web presence

In this chapter you will learn how to create an effective web presence for an electronic commerce application. It covers the ways in which online consumers can be identified and reached, the creation and maintenance of brands on the WWW and the business models used for selling products on the WWW.

4. Marketing on the web

In this chapter, you will learn how companies use the web as part of their marketing strategy - to advertise their products and services and promote their reputations. This chapter will also introduce you to some of the ways companies are making money by selling advertising on their websites.

5. Business-to-Business strategies: from electronic data interchange to electronic commerce

This chapter provides an overview regarding the purchasing, logistics and other support activities required to conduct electronic commerce. It outlines the concept of a network organisation that allows businesses to extend beyond their traditional limits in terms of how they are organised. In addition, you will also find details on the use of Electronic Data Interchange (EDI) mechanisms and how these are now being transferred to the internet. Finally, the chapter investigates the nature of supply chain management and the software packages used for business-to-business electronic commerce and supply chain management.

6. Online auctions, virtual communities, and web portals

This chapter outlines differing approaches to establishing WWW based actions and details several WWW auction strategies. This chapter also describes the notion of virtual community and explains how WWW portals may be used to attract online consumers. This chapter highlights how the web enables businesses to achieve activities that are completely new to commerce such as running auctions, creating virtual communities, and operating web portals.

7. The environment of electronic commerce: legal, ethical, and tax issues

In this chapter, you will learn about the international governing aspects of e-commerce. You will be provided with an overview of issues regarding borders, jurisdiction, and website content and how these factors affect a company's ability to conduct electronic commerce. You will also learn about legal issues that arise when the web is used in the commission of crimes, terrorist acts, and even the conduct of war. You will learn about the laws that govern e-commerce activities and the ethical issues that arise when companies conduct e-commerce transactions.

8. Web server hardware and software

This chapter provides an overview regarding the different types of hardware and software used to design, engineer and implement electronic commerce applications. By the end of this chapter, you should have a good understanding of web server hardware and feature sets with which to develop a successful electronic commerce application, plus a broad knowledge of the tools and performance evaluation criteria on which to base decisions as to how best to maintain and manage the application.

9. Electronic commerce software

In this chapter, you will learn that whatever the size, most e-commerce projects combine software and tools from different vendors to accomplish their goals. Even small companies rarely use products from a single source, as different software products perform different tasks or processes. This chapter is about which software is most suited to which task, and how different software packages work when integrated together.

10. Electronic commerce security

This chapter details the security measures that can be employed to reduce or eliminate intellectual property theft. It provides an overview of how to secure client computers from attack by viruses and ill-intentioned programs and scripts downloaded in web pages. This chapter also discusses the role of secure socket layers, secure http, and secure electronic transaction protocols, in protecting electronic commerce websites. This chapter also provides an overview of why secrecy, integrity and necessity are the three core parts of any security program.

Recommended reading

The following section details the books recommended for studying this course unit.

The recommended core textbook for this course unit is:

Electronic Commerce by Gary Schneider.
Publisher: Course Technology Inc., 2007, ISBN: 1418837032.

This book covers all the major aspects of the second wave of electronic commerce and how it is being used to change the business landscape. The book provides a detailed account of the major issues concerned with the establishment of electronic commerce business applications and explores the core aspects of deploying electronic commerce technologies in real-world situations. This is an excellent book for gaining a comprehensive understanding of electronic commerce and I strongly advise that you read this book in full and use it to accompany this subject guide.

Suggested further reading

Since this is a final year course, it is assumed that you have a familiarity with a wide breadth of ideas drawn from computing and information systems literature. Although this course unit is accompanied by a subject guide including case studies, you should read widely on the subject to gain a complete, balanced understanding of electronic commerce issues. The case studies, study questions and assignments for this course unit are demanding. They will take patience to read and sometimes will require more than one detailed reading to understand the core concepts and ideas that they are trying to portray. Students are strongly advised to read as widely as possible on the subject area of electronic commerce, not only because it is an emerging discipline, but also because many of the concepts it encompasses are challenging. The following books are suggested as further reading to broaden your understanding of the issues relating to electronic commerce.

Electronic Commerce: A Managerial Perspective (Pie) by Efraim Turban , Dave King , Jae Kyu Lee and Dennis Viehland.
Publisher: Prentice Hall; 4 edition (5 Sep 2005) , ISBN-10: 0131854615.

E-Business and E-Commerce Management by Dave Chaffey
Publisher: Financial Times/ Prentice Hall; 3 edition (19 Dec 2006) , ISBN-10: 1405847069.

E-Commerce: Business, Technology, Society by Kenneth Laudon , Carol Traver .
Publisher: Prentice Hall; 3 edition (20 April 2006), ISBN-10: 0131735160.

Electronic Commerce: Principles and Practice by Hossein Bidgoli.
Publisher: Academic Press (8 May 2003) , ISBN-10: 0120959771.

The Complete E-Commerce Book: Design, Build and Maintain a Successful Web-based Business by Janice Reynolds.
Publisher: CMP; 2 edition (30 Mar 2004) , ISBN-10: 1578203120.

Guide to effective study

The role of this subject guide is to complement the recommended textbook and further reading. This subject guide should be viewed as the 'glue' that holds these various information sources together. To study this course unit effectively it is important that you fully understand the complementary nature of this study material. Often, within the guide, you are asked to go online to read further material. Wherever possible, you should do this. This is because questions may be set in the examination paper which rely on your having read widely on the subject area. In other words, this subject guide is not meant to cover everything that the examination may contain. Keep this fact in mind at all times and do not neglect to do the reading assigned at the beginning of each chapter.

This guide is mainly concerned with summarising, highlighting or drawing attention to the points covered in a more exhaustive manner in the recommended reading. The guide can therefore help to concentrate efforts on the major points and issues.

Assignments

This subject guide is supplied with two sample assignments for you to complete. Each assignment is an opportunity for you to apply skills and knowledge acquired during study in a structured manner. Each assignment will require at least 20 hours for reading, preparation and data gathering. You will also be required to display an understanding of technical issues through practical exercises as part of each assignment. These sample assignments are provided to give you an idea of the number and type of questions your actual assignments for this course unit will include.

To achieve a good mark for your assignments, you are required to demonstrate the following:

- Critical reflection in thinking through the issues and effectively constructing appropriate arguments.
- The ability to be able to combine several ideas into a coherent whole.
- A good style of presentation, and the ability to express ideas in a clear and logical manner.

Examination papers

This subject guide is supplied with two sample examination papers. These papers are provided to give you an idea of the number and type of questions that the examination will include.

It should be noted that the sample questions provided at the end of each chapter, and the sample examination paper at the end of this guide are representative, but not comprehensive. It is possible that different kinds of questions on different topics and aspects covered in the guide and in the recommended textbook are asked in the actual examination.

Chapter 1

1 Introducing electronic commerce

Introduction

It is important that you read as widely as possible about the nature and current trends in electronic commerce. It is important that you understand how the development of electronic commerce has led to companies moving much of their business efforts to online environments. This chapter aims to introduce you to the main concepts underpinning electronic commerce today.

In this chapter, you will discover what makes electronic commerce different from more traditional forms of commerce, its advantages and disadvantages and how the international growth of the internet and the world wide web (WWW) has stimulated a global commercial environment which is now being exploited by many firms who are engaged in electronic commerce.

Student reading

It is strongly advised that you now read Chapter 1 of the recommended course text.

Electronic Commerce by Gary Schneider.
Publisher: Course Technology Inc., 2007, ISBN: 1418837032.

Learning objectives

By the end of this chapter and the relevant reading you should be able to:

- Explain what electronic commerce is, and how it is experiencing a second wave of growth.
- Critically discuss why companies are concentrating on revenue models and the analysis of business processes, instead of business models, when undertaking electronic commerce initiatives.
- Explain the economic forces which have created the business environments that have enabled the second wave of electronic commerce.
- Critically analyse the use of value chains and SWOT analysis when identifying e-commerce opportunities.
- Discuss the international nature of e-commerce, and the challenges that arise in engaging on a global scale.

Subject summary

Chapter overview

The business phenomenon that we now call electronic commerce has an interesting history. From humble beginnings in the mid-1990s, electronic commerce grew rapidly until 2000, when a major downturn occurred. Many people have seen news stories about the 'dot-com boom' followed by the 'dot-com bust' or the 'dot-bomb'. In the years 2000 to 2003, many industry observers were writing obituaries for electronic commerce. Just as the unreasonable expectations for immediate success fuelled the high expectations during the boom years, overly gloomy news reports coloured perceptions during this time. Although the rapid expansion and high levels of investment of the boom years are not likely to be repeated, the second wave of electronic commerce is well under way.

The second wave of e-commerce

Electronic commerce, or e-commerce, is now entering what can be described as a second or mature wave. This wave is characterised by the international nature in which e-commerce is being conducted and the reliance on revenue models as opposed to 'good internet ideas'. The 'dot-com' bubble that burst at the end of the late 1990s has led to a revision of the approaches to establishing e-commerce initiatives. Whilst the first wave of e-commerce was dominated by US businesses and was primarily in English, it is now far more common to find e-commerce shoppers interacting with websites in their own languages.

Definition of e-commerce

Although there are many definitions and explanations of e-commerce, the following definition provides a clear distinction. The reader is advised to look at the recommended texts for their interpretations of the following:

- Electronic commerce, or e-commerce, is defined to be the process of businesses trading with other businesses and the formulation of internal processes using electronic links.

- Electronic business, or e-business, is a term often used interchangeably with e-commerce, but is more concerned with the transformation of key business processes through the use of internet technologies.

From your reading it should be apparent to you that electronic commerce is more than online shopping. A more generic definition of electronic commerce would include electronic funds transfers used by many banks as well as business to business communications using the internet, extranet and intranet networks.

Categories of e-commerce

- **Business-To-Business e-commerce**

The largest category of e-commerce is business-to-business (B2B) commerce. This involves companies conducting e-procurement, supply chain management, network alliances, and negotiating purchase transactions over the internet. Businesses use e-commerce to lower transaction costs of conducting business and to make savings in terms of time and effort when conducting business.

- **Business-To-Consumer e-commerce**

Business-to-consumer (B2C) e-commerce involves businesses introducing products and services to consumers via internet technologies. This includes companies selling software and hardware through the internet, taking orders for products that are subsequently delivered to the consumer, and providing digital services such as online magazines and search engines.

- **Business processes**

Business process refers to the use of e-commerce to tailor the internal activities of a business in order to maximise their efficiency and effectiveness. Through the use of e-commerce, businesses can fine-tune supply chains, provide advanced consumer relations management systems, and reduce transaction costs.

- **Consumer-To-Consumer e-commerce**

Consumer-to-consumer (C2C) e-commerce is concerned with the use of e-commerce by individuals to trade and exchange information with other individuals. There has been a huge growth in consumer-to-consumer auctions sites such as e-Bay and sites enabling consumers to offer goods and services to other consumers on an individual basis.

- **Business-To-Government e-commerce**

Business-to-government (B2G) e-commerce is concerned with the need for business to sell goods or services to governments or government agencies. Such activities include supplying the army, police force, hospitals and schools with products and services. Furthermore, businesses will often compete in an online environment for contracts to provide services to the public on behalf of the government. Such services may include the collection of taxes, and the supply of public services.

The table below provides a summary of the different e-commerce categories.

Category	Description	Example
Business-to-business (B2B)	Businesses sell products or services to other businesses.	Grainger.com sells industrial supplies to large and small businesses through its website.
Business-to-consumer (B2C)	Businesses sell products or services to individual consumers.	Tesco.com sells merchandise to consumers through its website.
Business processes that support buying and selling activities	Businesses and other organizations maintain and use information to identify and evaluate consumers, suppliers, and employees. Increasingly, businesses share this information in carefully managed ways with their consumers, suppliers, employees, and business partners.	Dell Computer uses secure internet connections to share current sales and sales forecast information with suppliers. The suppliers can use this information to plan their own production and can thus deliver component parts to Dell in the right quantities at the right time.
Consumer-to-consumer (C2C)	Participants in an online marketplace can buy and sell goods to each other. As businesses also utilise this type, it can be considered a type of B2C e-commerce.	e-Bay is an online commercial marketplace, often using an auction system.
Business-to-government (B2G)	Businesses sell goods or services to governments and government agencies. Can also be considered as part of B2C e-commerce.	CAL-Buy portal for businesses that want to sell online to the State of California.

Material available only to students registered on this module.

The nature of e-commerce

Three core concepts underpin the nature of e-commerce:

- The management of transactions and transaction costs through the use of online technologies and computerised networks.
- The re-engineering of business processes into logical, related and sequential activities that ensure businesses engage in transactions in the most efficient and effective manner through the use of online technologies and computerised networks.
- The use of information technologies and computerised networks to facilitate employees' tele-commuting or tele-working. Such activities enable flexible working, distributed workforces and efficient productivity paths.

Learning activity

Write a 1,000 word essay on each of the core concepts listed above. These essays should be based on the information found in Chapter 1 of the recommended text, and also Chapters 1 and 2 of the additional text.

The historical development of e-commerce

The use of networks to exchange money and transfers began in the late 1950s with the development of electronic fund transfers (EFTs). EFTs, or wire transfers, were the electronic transmission of account information over private communication networks. Such activity may be thought of as electronic trading, since businesses and individuals could update accounts and trade via EFTs.

Electronic data interchange

Electronic data interchange (EDI), whereby businesses and individuals exchange computer readable data in a standard format to other businesses, was the earliest form of e-commerce. In the late 1960s, electronic data interchange was used to reduce the amount of time and effort inputting data such as invoices, purchase orders and bills. Since this type of information often had a regular format, computer systems were designed to read these documents electronically. Formats had to be agreed, and for many industries, such as transport and shipping, which are global in nature, such a unified approach was important.

Businesses that engage in EDI are referred to as Trading Partners. The biggest users of e-commerce were traditionally government agencies and large corporations. This was due to the high cost of implementation. Until the late 1990s, EDI meant the buying of expensive computer software and hardware, and establishing of direct network connections with all trading partners. Although some companies did offer value-added networks (VANs) as systems to conduct EDI, subscribing to such VANs came at a high cost.

The dot-com boom, bust and rebirth

Between the years 1997 and 2000 over 12,000 internet related businesses were started. However, many of these companies went bust, due to not having sufficiently robust revenue models to generate enough income to sustain their business. As more and more businesses competed for a fixed number of good ideas, internet businesses became overvalued and many bad ideas were also implemented. By 2000, the internet business had started to see a downturn. Thousands of businesses went bust as a lack of advertising revenue meant they could not sustain their early promise.

Learning activity

Write 1,000 words on two or more businesses in your country which started e-commerce activities in the late 1990s and went bust by the year 2002. You should be able to find many news stories during the period 2000-2002 proclaiming the death of e-commerce in your country.

The rebirth of e-commerce

The rebirth of e-commerce has been driven by far wider and more established internet access and businesses learning from the mistakes of the past. In addition, a steady growth in the business-to-consumer and business-to-business sector has meant that sales generated via e-commerce have started to rise.

In trying to understand why the second wave of e-commerce has been so successful, it is important to understand the limitations of the first wave. The following limitations define the first wave:

The first wave of e-commerce was limited to a large degree to US businesses and was not global in nature. Large international organisations felt that the language of the internet would be English, and that consumers would naturally use US businesses who already had a presence on the WWW.

Most of the early e-businesses used English as their language of choice. They created one e-commerce site, in English, and expected consumers from other countries to use this site. This meant that many users who did not speak English, or who did not feel confident enough to buy goods and services in English, did not conduct e-commerce.

Many of the original e-commerce businesses were started with outside investor money backing good ideas. Although investors could see how the internet could be used to refine business processes and reduce transaction costs, less care was taken with understanding how these businesses could produce revenue. Often, businesses were based on the belief that advertising revenue would flood in to support their activities. In reality, the limited budgets of advertising departments and their caution in relation to the use of these budgets online meant that perceived revenue was often not realised.

Email has traditionally been unstructured in terms of how it was used by businesses. Although businesses used email for communications, they had no formal structure and could not be read by machines and therefore were still associated with the high cost of employing people to read them. Email has also been associated with the ever increasing amounts of spam and other unsolicited content.

During the late 1990s, the expected reliance on advertising as a revenue source was a major mistake by many e-businesses. The lack of alternative revenue models or an understanding of what online advertising actually yielded in terms of returns meant that many e-businesses were left with no revenue streams.

Learning activity

Choose two successful online businesses, whose revenue are not based on advertising, and write 1,000 words to describe each of them.

The second wave

The key characteristics of the second wave of e-commerce can be understood to be based on internationalisation and widening participation.

Many businesses have realised that the internet is a global marketplace and have begun to provide global e-commerce presences. Businesses have begun to produce websites in local languages which are customised to local markets in terms of the content they provide.

Online businesses are now more often established with their own funds and capital. Great effort and care is taken in devising revenue models and identifying appropriate revenue streams. There is an emphasis not on who will supply us with revenue, but how are we going to generate revenue. Businesses are willing to be flexible in terms of how revenue is generated, and believe that reacting to current trends is the key to establishing a successful online presence.

There has been an explosion in the number of internet users worldwide, and it is fair to say that most countries in the world now have internet access, if not always at the same level of quality. However, many internet users worldwide now have access to broadband connections, and these have meant that digital content such as video and music can be sold and exchanged online.

There is a much greater emphasis on the use of customised email strategies. Businesses now use email for formulating deep relationships with consumers and ensuring that consumers are contacted in a timely manner.

Businesses today use a multitude of sophisticated advertising approaches that are integrated with their e-business activities. They have developed new strategies for the sale of distributed products with advertising attached.

The main differences between the first and second waves of e-commerce are summarised in the table below.

First Wave	Second Wave
Dominant influence of U.S. businesses. Extensive use of the English language	Global enterprises in many countries are participating in electronic commerce.
Internet technologies were slow. Most consumers connected to the internet using dial-up modems.	The increase in broadband connections in homes is a key element. Although these connections are more expensive, they are up to 20 times faster and can alter the way people use the web.
Electronic mail was used as a tool for relatively unstructured communication.	Customized e-mail strategies are now integral to consumer contact.
Over-reliance on advertising as a revenue source of many failed dot-com businesses.	Some categories of online advertising, such as employment services (job wanted ads) are growing rapidly and are replacing traditional advertising outlets.
Many new companies started with outside investor money	Established companies fund electronic commerce initiatives with their own capital

Business models, revenue models, and business processes

A business model can be thought of as a set of business processes that are combined to yield a profit. In the first wave of e-commerce, it was thought that a good business model would yield significant sales and market dominance. However, the idea that the key to success was simply to copy the business model of a successful dot-com business led to many business failures.

Traditional commerce and business processes

Traditional commerce can broadly be defined as the exchange of valuable objects or services between at least two parties. Such activity includes all of the processes that each party undertakes to complete the transaction. The earliest form of traditional commerce is the barter system.

The activities which most businesses engage in as they conduct commerce are called business processes.

Classic business processes include:

- transferring money and information
- placing of orders for products
- sending of invoices to consumers
- delivery of goods.

It is clear today that some products are more suited to the internet than others. This is because the merchandising skills related to these products transfer more easily to the web. Products that are well suited are: commodity products such as books, CDs, and DVDs. These products are hard to distinguish from the same products or services from other sellers. Their features are standardised and well known by potential buyers.

Other products that are well suited to e-commerce include software which can be downloaded easily via the web, and the sale and purchase of services such as tickets and travel services. The web is an

excellent medium for connecting potential buyers of services to supplier. Consumers can initiate many of the business processes required to complete sales and purchasing activities via a company's website.

The web appears to support the sale and purchase of insurance and investment products, and provides an excellent infrastructure for online banking.

The table below outlines products that are well suited to e-commerce, those that are well suited to traditional commerce, and those that are suited to a combination of traditional and electronic commerce strategies.

Well Suited to Electronic Commerce	Suited to a Combination of Electronic and Traditional Commerce Strategies	Well Suited to Traditional Commerce
Sale/purchase of books and CDs	Sale/purchase of automobiles	Sale/purchase of impulse items for immediate use
Online delivery of software	Online banking	Small-denomination purchases and sales
Sale/purchase of travel services	Roommate-matching services	Sale/purchase of high-value jewellery and antiques
Online shipment tracking	Sale/purchase of residential real estate	
Sale/purchase of investment and insurance products		

A key factor in determining whether a product is well suited to electronic commerce or not will be its shipping profile. A product's shipping profile is the collection of attributes that affect how easily that product can be packaged and delivered. A high value-to-weight ratio can help by making the overall shipping cost a small fraction of the selling price. An airline ticket is an excellent example of an item that has a high value-to-weight ratio. Products that are consistent in size, shape, and weight can make warehousing and shipping much simpler and less costly. However, the shipping profile is only one factor. Expensive jewellery has a high value-to-weight ratio, but many people are reluctant to buy it without first examining it in person. There may be an exception if the jewellery is sold with a generous return policy under a well-known brand name.

Advantages of electronic commerce

All the advantages of electronic commerce for businesses can be summarized in one statement:

> Electronic commerce can increase sales and decrease costs. Advertising done well on the web can get even a small firm's promotional message out to potential consumers in every country in the world. A firm can use electronic commerce to reach narrow market segments that are geographically scattered. The web is particularly useful in creating virtual communities that become ideal target markets for specific types of products or services. A virtual community is a gathering of people who share a common interest, but instead of this gathering occurring in the physical world, it takes place on the internet.

The table below lists some key advantages of e-commerce:

Advantages:	♦ A business can reduce the costs of handling sales inquiries, providing price quotes, and determining product availability by using electronic commerce in its sales support and order-taking processes. ♦ Electronic commerce provides buyers with a wider range of choices than traditional commerce. ♦ Electronic commerce provides buyers with an easy way to customize the level of detail in the information they obtain about a prospective purchase. ♦ Electronic payments of tax refunds, public retirement, and welfare support cost less to issue and arrive securely and quickly when transmitted over the internet. ♦ Electronic payments can be easier to audit and monitor than payments made by cheque, providing protection against fraud and theft losses. ♦ Electronic commerce can also make products and services available in remote areas.

Disadvantages of electronic commerce

Some businesses are less suitable for electronic commerce. Such businesses may be involved in the selling of items which are perishable or high-cost, or which require inspection before purchasing. Most of the disadvantages of electronic commerce today, however, stem from the newness and rapidly developing pace of the underlying technologies. These disadvantages will disappear as electronic commerce matures and becomes more available to and accepted by the general population.

The table below lists some of the key disadvantages of e-commerce:

Disadvantages:	♦ Return-on-investment is difficult to calculate. ♦ Many firms have had trouble recruiting and retaining employees with the technological, design, and business process skills needed to create an effective electronic commerce presence. ♦ Difficulty of integrating existing databases and transaction-processing software designed for traditional commerce into the software that enables electronic commerce. ♦ Many businesses face cultural and legal obstacles to conducting electronic commerce.

Economic forces and electronic commerce

Economists use a formal definition of market that includes two conditions: first, that the potential sellers of a good come into contact with potential buyers, and second, that a medium of exchange is available. This medium of exchange can be currency or barter.

Transaction costs are the total of all costs that a buyer and seller incur as they gather information and negotiate a purchase-sale transaction.

When transaction costs are high, businesses may form organizations to replace market-negotiated transactions. These organizations are generally hierarchical and include strong supervision and worker-monitoring elements. The practice of an existing firm replacing one or more of its supplier markets with its own hierarchical structure for creating the supplied product is called vertical integration. This practice is often facilitated by the use of internet technologies to connect these suppliers with the firm.

Value chains in electronic commerce

A value chain is a way of organizing the activities that each strategic business unit undertakes to design, produce, promote, market, deliver, and support the products or services it sells. In addition to these primary activities, supporting activities, such as human resource management and purchasing, are included when modelling a business's value chain.

Examples of primary activities of a business may include identifying consumers, purchasing materials, manufacturing products, and marketing and selling these products. Additionally, the activities of delivering a product and providing aftersales services are primary activities. Secondary activities include financing and administrating the business, developing human resources, and providing technical support.

Industry value chains

Michael Porter, an American academic in the field of management and economics, identifies the importance of examining where the strategic business unit fits within its industry. Porter uses the term 'value system' to describe the larger stream of activities into which a particular business unit's value chain is embedded. However, many subsequent researchers and business consultants have used the term 'industry value chain' when referring to value systems.

SWOT analysis: evaluating business unit opportunities

SWOT analysis is an examination of a businesses Strengths, Weaknesses, Opportunities and Threats.

As they examine their industry value chains, many businesses are finding that they can use electronic commerce and internet technologies to reduce costs, improve product quality, reach new consumers or suppliers, and create new ways of selling existing products. For example, a software developer who releases annual updates to programs might consider removing the software retailer from the distribution channel for software updates by offering to send the updates through the internet directly to the consumer. This change would modify the software developer's industry value chain and would provide

an opportunity for increasing sales revenue (the software developer could retain the margin a retailer would have added to the price of the update), but it would not appear as part of the software developer business unit value chain. By examining elements of the value chain outside the individual business unit, managers can identify many business opportunities, including those that can be exploited using electronic commerce.

International nature of electronic commerce

It is important for all businesses to establish trusting relationships with their consumers. Companies with established reputations in the physical world often create trust by ensuring that consumers know who they are. These businesses can rely on their established brand names to create trust on the web. New companies that want to establish online businesses face a more difficult challenge because a kind of anonymity exists for companies trying to establish a web presence.

Most companies now realize that the only way to do business effectively in other cultures is to adapt to those cultures. The phrase “think globally, act locally” is often used to describe this approach. The first step that a web business usually takes to reach potential consumers in other countries, and thus in other cultures, is to provide local language versions of its website. This may mean translating the website into another language or regional dialect. Researchers have found that consumers are far more likely to buy products and services from websites in their own language, even if they can read English well. Only 370 million of the world’s 6 billion people learned English as their native language.

An important element of business trust is anticipating how the other party to a transaction will act in specific circumstances. That is one reason why companies with established brands can build online businesses more quickly and easily than a new company without a reputation. The brand conveys some expectations about how the company will behave. For example, a potential buyer might like to know how the seller would react to a claim by the buyer that the seller misrepresented the quality of the goods sold. Part of this knowledge derives from the buyer and seller sharing a common language and common customs. Business partners ideally have a common legal structure for resolving disputes. The combination of language and customs is often called culture. Most researchers agree that culture varies across national boundaries and, in many cases, varies across regions within nations. All companies must be aware of the differences in language and customs that make up the culture of any region in which they intend to do business.

Businesses that successfully meet the challenges posed by trust, language, and culture issues still face the challenges posed by variations and inadequacies in the infrastructure that supports the internet throughout the world. Internet infrastructure includes the computers and software connected to the internet and the communications networks over which the message packets travel. In many countries other than the United States, the telecommunications industry is either government owned or heavily regulated by the government. In many cases, regulations in these countries have inhibited the development of the telecommunications infrastructure or limited the expansion of that infrastructure to a size that cannot reliably support internet data packet traffic.

More than half of all businesses on the web turn away international orders because they do not have the processes in place to handle such orders. Some of these companies are losing millions of dollars worth of international business each year. This problem is global; not only are U.S. businesses having difficulty reaching their international markets, but businesses in other countries are having similar difficulties reaching the U.S. market.

Review questions

True/False questions

Indicate whether each of the following statements is true or false.

____ 1. IBM defines electronic business as "the transformation of key business processes through the use of internet technologies."

____ 2. Business-to-consumer electronic commerce occurs when a person sells an item through a web auction site to another person.

____ 3. In some cases, business processes use traditional commerce activities very effectively, and technology cannot improve upon them.

____ 4. A product that has a strong brand identity is easier to sell over the web than an unbranded item.

____ 5. Electronic commerce provides buyers with an easy way to customize the level of detail in the information they obtain about a prospective purchase.

____ 6. Electronic payments can be easier to audit and monitor than payments made by cheque.

____ 7. Economists use a formal definition of a market that includes two conditions: first, that the potential sellers of a good come into contact with potential buyers; and second, that a medium of exchange is available.

____ 8. Nobel laureate Ronald Coase reasoned that when transaction costs were low, businesspeople would form organizations to replace market-negotiated transactions.

____ 9. Sellers and buyers in commodity markets experience significant transaction costs.

____ 10. A small-denomination item is a product or service that is hard to distinguish from the same product or services provided by other sellers.

Multiple choice questions

Identify the choice that best completes the statement or answers the question.

____11. The group of logical, related, and sequential activities and transactions in which businesses engage are often collectively referred to as business ____.
a. services
b. processes
c. logistics
d. communications

____12. Some researchers define a fourth category of electronic commerce called ____, which includes individuals who buy and sell items among themselves.
a. C2C
b. B2B
c. C2B
d. B2C

____ 13. Electronic funds transfers are also called ____.
a. wire transfers
b. business transfers
c. money transfers
d. telephone transfers

____14. A(n) ____ is a set of processes that combine to yield a profit.
a. value system
b. industry value chain
c. shipping profile
d. business model

____15. ____ transactions are not well suited to electronic commerce because no standard method for transferring small amounts of money on the web has become generally accepted.
a. E-procurement
b. Commodity items
c. Local
d. Low-denomination

____16. Which of the following will never lend themselves to electronic commerce?
a. Greeting cards
b. High value diamonds
c. Books
d. Cigars

____17. ____ organizations are particularly well suited to technology industries that are information-intensive.
a. Network
b. Retailing
c. Hierarchical
d. Manufacturing

____18. As more people participate in a network, the value of the network to each participant increases. This is known as the ____.
a. law of diminishing returns
b. network effect
c. listing effect
d. fax effect

____19. Manuel Castells has predicted that ____ will become the organizing structure for all social interactions among people.
a. economic networks
b. free enterprises
c. hierarchical layers
d. value systems

____20. In the mid-1990s, ____ used a SWOT analysis to create a strong business strategy that has helped it become a strong competitor in its industry value chain.
a. HP Computer
b. Acer Computer
c. Dell Computer
d. NEC Computer

Essay questions

21. What types of business processes are well suited to electronic commerce?

22. Discuss the importance of transaction costs.

23. List the primary and support activities that are implemented in strategic business unit value chains.

24. When conducting SWOT analysis, what are some of the questions that one should ask to identify strengths and weaknesses?

25. Describe the three categories of electronic commerce that are most commonly used.

Chapter 2

2 Technology infrastructure: the internet and the world wide web

Introduction

The relentless advance of the internet, and its surrounding technologies, has driven a significant shift in how organisations communicate in the last thirty years. The internet's advancing technological infrastructure, in particular the emergence of network-based computing, facilitates the fast-growing realm of the economic sphere – e-commerce.

The internet – essentially, a global network of computers - is now a primary medium for marketing, advertising, publishing, software distribution, real-time communications, radio, film, television and digital video broadcasting.

The world wide web (WWW) emerged in the 1990s, and its architect, considered to be Tim Berners-Lee, also invented HTML, its accompanying Hypertext Mark-up Language, which was added to the growing global network for navigation. Current technology also support multimedia playback of sound, graphics and moving images.

Companies conducting business on the web must adapt and accept the inevitable evolution and development of its technology. These developments effect hardware and software, and can also change consumer behaviour, in particular the way consumers interact with the company. This in turn will influence company revenue and profile.

This chapter will give you a broad understanding of the internet technologies upon which electronic commerce, in all its forms, is based today. It will be an important foundation, since many of the concepts and ideas which will be discussed in greater detail later in the course are introduced in this chapter.

Student reading

It is strongly advised that you now read Chapter 2 of the recommended course text:

Electronic Commerce by Gary Schneider.
Publisher: Course Technology Inc., 2007, ISBN: 1418837032.

Learning objectives

By the end of this chapter and the relevant reading you will be able to:

- Discuss the origin, growth, and current structure of the internet.
- Explain how packet-switched networks are combined to form the internet.
- Discuss in detail how internet protocols and internet addressing work.
- Critically discuss the history and use of markup languages on the web, including SGML, HTML, and XML.
- Explain how HTML tags and links work on the world wide web.
- Assess the differences among internets, intranets, and extranets.

- Discuss the different options for connecting to the internet, including cost and bandwidth factors.
- Discuss Internet2 and the Semantic Web.

Subject summary

Chapter overview

This chapter is about the history of the internet and the world wide web, and how these technologies emerged from research projects and grew to be the supporting infrastructure for electronic commerce today. It also describes the protocols, programs, languages, and architectures that support the internet and the web.

In order for electronic commerce to exist, a number of technologies must first be in place. Both the internet and the WWW require support from database software, network switches and hubs, encryption hardware and software, multimedia structures and a way to integrate each of these technologies. This chapter analyses each of the technologies that electronic commerce relies upon for technological support.

The internet and the world wide web

A computer network is any technology that allows people to connect computers to each other. The internet is a global computer network, to which new computers are connected on a daily basis. This computer network - the internet - is the basic technology structure underlying all electronic commerce.

Of the millions of people who use the internet every day, only a small percentage of them really understand how it works. The internet is a large system of interconnected computer networks that span the globe. The part of the internet known as the world wide web, or, more simply, the web, is a subset of the computers on the internet that are connected to each other in a specific way, that makes them and their contents easily accessible to each other. The web is operated by an easy-to-use standard interface. This is its most important asset, as it is this which renders it accessible to the majority of users who are not computer experts.

Timeline:	♦ **Origins of the internet:** 1969: researchers in the Advanced Research Projects Agency (ARPA) Defence Department used the network model developed by its researchers to connect four computers—one each at the University of California at Los Angeles, SRI International, the University of California at Santa Barbara, and the University of Utah—into a network called the ARPANET. The ARPANET was the earliest of the networks that eventually combined to become what we now call the internet. ♦ **New Uses for the internet:** 1972: E-mail was born when Ray Tomlinson, a researcher who used the network, wrote a program that could send and receive messages over the network. This new method of communicating became widely used very quickly. In addition, the first e-mail mailing lists - an e-mail address that forwards any message it receives to any user who has subscribed to it - also appeared on these networks. In 1979, a group of students and programmers at Duke University and the University of North Carolina started User's News Network – Usenet, which allows anyone who connects to the network to read and post articles on a variety of subjects. ♦ **Commercial Use of the internet:** 1989: the National Science Foundation (NSF) permitted two commercial e-mail services, MCI Mail and CompuServe, to establish limited connections to the internet for the sole purpose of exchanging e-mail transmissions with users of the internet. These connections allowed members of the research and education communities on the internet to send e-mail directly to MCI

	Mail and CompuServe addresses, and – most important historically – allowed commercial enterprises to send e-mail directly to internet addresses. ♦ **Growth of the internet:** 1995: The privatization of the internet was substantially completed when the NSF turned over the operation of the main internet connections to a group of privately owned companies. The new structure of the internet was based on four network access points (NAPs) located in San Francisco, New York, Chicago, and Washington, D.C., each operated by a separate telecommunications company. As the internet grew, more companies opened more NAPs in more locations. These companies, known as network access providers, sell internet access rights directly to larger consumers and indirectly to smaller firms and individuals through other companies, called internet service providers (ISPs).

Emergence of the world wide web

The WWW is software that runs on computers that are connected to the internet. The network traffic generated by web software is currently the largest single category of traffic on the internet, outpacing e-mail, file transfers, and other data transmission traffic.

The Development of Hypertext:	♦ **1945:** Vannevar Bush, who was director of the U.S. Office of Scientific Research and Development, wrote an article in *The Atlantic Monthly* speculating that engineers would eventually build a machine that he called the Memex, a memory extension device that would store all of an individual's books, records, letters, and research results on microfilm. ♦ **1960s:** Ted Nelson described a similar system in which text on one page links to text on other pages – which he called hypertext. Douglas Engelbart created the first experimental hypertext system on one of the large computers of the 1960s – and also invented the computer mouse. ♦ **1987:** Ted Nelson published Literary Machines, a book in which he outlined, a global system for online hypertext publishing and commerce, called project Xanadu. ♦ **1989:** Tim Berners-Lee proposed a hypertext development project with the intention of providing data-sharing functionality. Over the next two years, Berners-Lee developed the code for a hypertext server program and made it available on the internet.

Packet-switching networks

A local area network (LAN) is network of computers located close together (for example, in the same building). Networks of computers that are connected over greater distances are called wide area networks (WANs).

An individual packet of information travels from one network to another through routing computers – the computers through which the packet travels determine the best route for getting the packet to its destination. Routing computers, router computers, routers, or gateway computers act as the gateway from a LAN or WAN to the internet. They decide how best to forward each packet, as they are located at the border between the organization and the internet. The programs on router computers that determine the best path on which to send each packet contain rules called *routing algorithms*. The programs apply their routing algorithms to information they have stored in routing tables or configuration tables.

The internet also has routers which handles packet traffic along the internet's main connecting points. These routers and the telecommunications lines connecting them are collectively referred to as the internet backbone. These routers are very large computers that can each handle more than 50 million packets per second! They are often known as *backbone routers*.

Transmission control protocol/internetworking protocol (TCP/IP)

The collection of rules for formatting, ordering, and error-checking data sent across a network is called a protocol. This open architecture philosophy was developed for the evolving ARPANET (which later became the core of the internet) and included the use of a common protocol for all computers connected to the internet.

The set of communication protocols and applications used to communicate between computers on the internet is called TCP/IP. This set of protocols define the rules by which packets are created, connections are made and information is transported between computers on the internet. This set of protocols was first developed by Vincent Cerf and Robert Kahn in the early 1970s.

TCP is the protocol that defines how each message is de-assembled into packets before transmission and also specifies how such packets are re-assembled into a message or file once they arrive. IP specifies the rules that govern how packets are routed from their source computer across the internet to a destination computer.

IP addresses and domain names

The version of IP that has been in use for the past 20 years on the internet is *Internet Protocol version 4*, abbreviated IPv4. It uses a 32-bit number to identify the computers connected to the internet. This address is called an IP address. Computers do all of their internal calculations using a base 2 (binary) number system in which each digit is either a 0 or a 1, corresponding to a condition of either off or on.

When a router breaks a message into packets before sending it onto the internet, the router marks each packet with both the source IP address and the destination IP address of the message. To make them easier to read, IP numbers (addresses) appear as four numbers separated by periods. This notation system is called dotted decimal notation. An IPv4 address is a 32-bit number, so each of the four numbers is an 8-bit In most computer applications, an 8-bit number is called a byte; however, in networking applications, an 8-bit number is often called an octet. In binary, an octet can have values

from 00000000 to 11111111; the decimal equivalents of these binary numbers are 0 and 255, respectively.

The Internet Engineering Task Force (IETF) worked on several new protocols that could solve the limited addressing capacity of IPv4 (there are only 2^{32} different addresses available), and in 1997, approved Internet Protocol version 6 (IPv6) as the protocol that will replace IPv4. The new IP is being implemented gradually because the two protocols are not directly compatible.

Due to concern that users might find the dotted decimal notation difficult to remember, the founders of the internet created an alternative addressing method that uses words. In this system, an address such as www.thomson.com is called a *domain name*. Domain names are sets of words that are assigned to specific IP addresses and can contain two or more word groups separated by periods. The rightmost part of a domain name is the most general, as you move to the left, each part of the domain name becomes more specific.

Webpage request and delivery protocols

Web client computers run software called web client or web browser software, which sends requests for webpage files to other computers, called *web servers*. A web server computer runs software called web server software. Web server software receives requests from many different web clients and responds by sending files back to those web client computers. Now the web client computer's web client software renders those files into a *webpage*. Thus, the purpose of a web server is to respond to requests for web pages from web clients. Thus client / server architecture is when client computers running web client software combine with server computers running web server software.

Other internet protocols

Electronic mail (e-mail) sent across the internet must also be formatted according to a common set of rules. Most organizations use a client/server structure to handle e-mail. The organization has a computer called an e-mail server and its software is devoted to storing, forwarding and general handling of e-mail. People in the organization might use a variety of e-mail client software programs, to read and send e-mail. These programs include Microsoft Outlook, Netscape Messenger, Pegasus Mail, Qualcomm Eudora, and many others. The e-mail client software communicates with the e-mail server software on the e-mail server computer to send and receive e-mail messages. The various types of email protocols include:

- Simple Mail Transfer Protocol (SMTP) which specifies the format of e-mail messages
- Post Office Protocol (POP) which is responsible for the retrieval of e-mail and attachments from mail server computers (special computers responsible for storing electronic mail connected to the internet).
- Interactive Mail Access Protocol (IMAP) which defines how an e-mail client program requests mail from a mail server and determines which messages are selected for download. IMAP also allows users to create and manipulate mail boxes on mail servers.

Unsolicited commercial e-mail (UCE)

Unsolicited commercial e-mail (UCE), also known as *spam* or bulk mail, is electronic junk mail and can include solicitations, advertisements, or e-mail chain letters. Spam has become a major concern within internet technology. To an individual and a company, the negative effects of spam include time wasting and inefficient use of computer disk space, as well as consuming large amounts of internet capacity. If one person sends a useless e-mail to a million other people, that unsolicited mail consumes internet resources for a few moments that would otherwise be available to other users.

Markup languages and the web

Web pages can include many elements, such as graphics, photographs, sound clips, and even small programs that run in the web browser. These elements are stored on the web server as separate files. The most important parts of a webpage, however, are the structure of the page and the text that makes up the main part of the page. The page structure and text are stored in a text file that is formatted, or marked up, using a *text markup language*. A text markup language specifies a set of tags that are inserted into the text. These markup tags, also called tags, provide formatting instructions that web client software can understand. The web client software utilises the instructions as it renders the text and page elements contained in the other files into the webpage that appears on the screen of the client computer.

- **Standard Generalized Markup Language (SGML):** Used for many years by the publishing industry to create documents that needed to be printed in various formats and that were revised frequently. In addition, SGML is also a *meta language* - a language that can be used to define other languages. SGML offers user-defined tags, is non-proprietary and platform independent.

- **Hypertext Markup Language:** HTML includes tags in an electronic document that define the format and style of text elements. The tags in an HTML document are interpreted and used by the web browser to format the display of the text enclosed by the tags. The web organizes interlinked pages of information residing on sites around the world. Hyperlinks on web pages form a "web" of those pages. Versions of HTML released by the W3C after 1997 include an HTML tag called the object tag and also include support for Cascading Style Sheets. Web designers can embed scripting language code on HTML pages by using the object tag.

- **Extensible Markup Language (XML)**: XML is referred to as a meta language since users can create their own markup elements, thus extending its usefulness. Note that XML includes data management capabilities that HTML cannot provide. XML differs from HTML in two important respects. First, XML is not a markup language with defined tags. It is a framework within which individuals, companies, and other organizations can create their own sets of tags. Second, XML tags convey the meaning (the semantics) of the information included within them without specifying how text appears on a webpage.

- **HTML and XML Editors**: Web designers can create HTML documents in any general-purpose word processor or text editor. However, by using one of the special-purpose HTML editors, web designers may be able to create web pages much more easily. There are many freeware, shareware, and commercial HTML editors available for download on the internet, for example CoffeeCup, HomeSite, and CuteHTML. XML files, like HTML files, can be created in any text editor. However, programs designed to make the task of designing and managing XML files easier are also available, such as Epic Editor, TurboXML, XMetal, and XML Spy.

Material available only to students registered on this module.

Not all TCP/IP networks need to connect to the internet. Many companies build *intranets* which are an interconnected network (or internet), usually using the TCP/IP protocol set, that do not extend beyond their organizational boundaries. An *extranet* is an intranet that has been extended to include specific entities outside the boundaries of the organization, such as business partners, consumers, or suppliers. The infrastructure for a private network should include a TCP/IP network, WWW authoring software, WWW server hardware and software, WWW clients and a firewall server. Benefits of a private network include minimising cost (since many of these requirements are probably in place at a firm already using electronic commerce), increasing time efficiency, and making relevant internal information more easily accessible.

Internet connection options

As we have learned, the internet is a set of interconnected networks. A corporation or individual cannot become part of the internet without a telephone connection or a connection to a LAN or intranet. Larger firms that provide internet access to other businesses are *called Internet Access Providers* (IAPs) or *Internet Service Providers* (ISPs), and they usually offer several connection options. Following is a brief description, including the advantages and disadvantages, of current connection choices.

Connectivity overview

ISPs enable several different ways to connect to the internet. The most common connection options are voice-grade telephone line, various types of broadband connections, leased line, and wireless. *Bandwidth* is one of the major distinguishing factors between various ISPs and their connection options. Bandwidth is the amount of data that can travel through a communication line per unit of time. The higher the bandwidth, the faster data files travel and the faster web pages appear on your screen.

Voice-grade telephone connections

The most common way to connect to an ISP is through a modem connected to your local telephone service provider. POTS, (Plain Old Telephone Service) use existing telephone lines and an analogue modem to provide a bandwidth of between 28 and 56 Kbps. Some telephone companies offer a higher grade of service called Digital Subscriber Line (DSL) protocol.

Broadband connections

Broadband services are connections that operate at speeds of greater than about 200 Kbps. One of the newest technologies that uses the DSL protocol to provide service in the broadband range is Asymmetric Digital Subscriber Line (ADSL, usually abbreviated DSL). It provides transmission bandwidths from 100 to 640 Kbps upstream and from 1.5 to 9 Mbps (million bits per second) downstream. For businesses, a high-speed DSL (HDSL) connection service can provide more than 768 Kbps of *symmetric* bandwidth.

Leased-line connections

Very high bandwidth is available to large organizations that need to connect hundreds or thousands of individual users to the internet. NAPs use T1 and T3 lines. NAPs and the computers that perform routing functions on the internet backbone also use technologies such as frame relay and Asynchronous Transfer Mode (ATM) connections and optical fibre (as opposed to copper wire) connections with bandwidths determined by the class of fibre optic cable used. An OC3 (optical carrier 3) connection provides 156 Mbps, an OC12 provides 622 Mbps, an OC48 provides 2.5 gbps (gigabits, or 1 billion bits per second), and an OC192 provides 10 gbps.

Wireless Connections

In recent years, companies such as DirecPC, DIRECWAY, and StarBand, have started to offer satellite internet connections that do not require a POTS modem connection for uploads. These connections use a microwave transmitter for internet uploads. This transmitter provides upload speeds as high as 150 Kbps. Initially, the installation charges were much higher than for other residential internet connection services because a professional installer was needed to carefully aim the transmitter's dish antenna at the satellite. As the accuracy of the antennas improved, some of these companies now offer a self-installation option that drastically reduces the initial cost. However, many are still affected by its limitations. For example, in North America the antennas must have a clear line of sight into the south-western sky. This requirement can make these services unusable for many people living in large cities or on the wrong side of an apartment building.

Learning activity

Do some research to find out about the different kinds of internet connection services which are available in your own area. What are the benefits of these different services and what are the costs?

Internet2

Internet2 is an experimental test bed for new networking technologies that is separate from the original internet. At the high end of the bandwidth spectrum, a group of network research scientists from nearly 200 universities and a number of major corporations joined together in 1996 to recapture the original enthusiasm of the ARPANET with an advanced research network. When the National Science Foundation turned over the internet backbone to commercial interests in 1995, many scientists felt that they had lost a large, living laboratory. Internet2 is the replacement for that laboratory. It has achieved bandwidths of 10 gbps and more on parts of its network.

Review questions

True/False questions

Indicate whether each of the following statements is true or false.

____1. E-mail was born in 1972 when a researcher wrote a program that could send and receive messages over the network.

____2. In 1989, the NSF permitted two commercial e-mail services, MCI Mail and CompuServe, to establish limited connections to the internet for the sole purpose of exchanging e-mail transmissions with users of the internet.

____3. The web is software that runs on computers that are connected to the internet.

____4. A domain name is a set of words assigned to specific IP addresses.

____5. IMAP is a newer e-mail protocol that performs the same basic functions as POP, but includes additional features.

____6. HTML is a meta language because users can create their own markup elements that extend the usefulness of XML.

____7. XML is a markup language with defined tags.

____8. The internet provides a high degree of security in its basic structure.

____9. Asymmetric connections provide the same bandwidth for each direction.

____10. The Internet2 project is focused mainly on technology development.

Multiple choice questions

Identify the choice that best completes the statement or answers the question.

____11. HTML was developed by ____.

a.	ARPANET	c.	Ted Nelson
b.	NSF	d.	Tim Berners-Lee

____12. When packets leave a network to travel on the internet, they must be translated into a standard format. ____ usually perform this translation function.

a.	Switches	c.	Routers
b.	Bridges	d.	Routing algorithms

____13. ____ travel from computer to computer along the interconnected networks until they reach their destinations.

a.	Routers	c.	Switches
b.	Packets	d.	Bridges

____ 14. Routers and the telecommunications lines connecting them are collectively referred to as ____.

a. backbone routers
b. internet routers
c. an asynchronous backbone
d. the internet backbone

____ 15. IPv6 uses a(n) ____ number for addresses.

a. 32-bit
b. 56-bit
c. 128-bit
d. 256-bit

____ 16. The ____ numbering system uses 16 digits.

a. hexadecimal
b. decimal
c. binary
d. ASCII

____ 17. The rightmost part of a domain name is called a(n) ____.

a. top-level domain
b. URL
c. category
d. government-level domain

____ 18. The early versions of ____ allowed webpage designers to create text-based electronic documents with headings, title bar titles, bullets, lines, and ordered lists.

a. HTTP
b. HTML
c. SGML
d. XML

____19. The ____ tag is used to create hyperlinks in a web document.

a. head
b. anchor
c. title
d. ol

____ 20. A(n) ____ is an interconnected network, usually one that uses the TCP/IP protocol set, and does not extend beyond the organization that created it.

a. internet
b. extranet
c. intranet
d. ARPANET

Essay questions

21. As an individual packet travels from one network to another, the computers through which the packet travels determine the best route for getting the packet to its destination. Describe this process.

22. Identify the four key rules for message handling.

23. What is the difference between TCP and IP?

24. What is the difference between a public network and a private network?

25. What are the advantages of Bluetooth technology?

Chapter 3

3 Selling on the web: revenue models and building a web presence

Introduction

This chapter is about the about the various models used by web businesses today to generate revenue. Such models include: web catalogue, advertising-supported, advertising-subscription mixed, and fee-based. These approaches can work for both business-to-consumer (B2C) and business-to-business (B2B) electronic commerce. Many companies create one website to handle both B2C and B2B sales. Some businesses use the same revenue model for both types of sales, despite creating separate sites (or separate pages within one site) for B2C and B2B e-commerce.

In this chapter you will learn how to create an effective web presence for an electronic commerce application. The chapter covers the ways in which online consumers can be identified and reached, the creation and maintenance of brands on the WWW and the business models used for selling products on the WWW.

Student reading

It is strongly advised that you now read Chapter 3 of the recommended course text:

Electronic Commerce by Gary Schneider.
Publisher: Course Technology Inc., 2007, ISBN: 1418837032.

Learning objectives

By the end of this chapter and the relevant reading you will be able to:

- Discuss relative approaches for constructing revenue models.
- Critically analyse how some companies move from one revenue model to another to achieve success.
- Discuss the revenue strategy issues that companies face when selling on the web.
- Compare and contrast alternative approaches to creating an effective business presence on the web.
- Explain the main issues associated with website usability.
- Discuss alternative approaches to effective communication with consumers on the web.

Subject summary

Chapter overview

This chapter gives an overview regarding how a business may establish an effective WWW presence. It addresses the issue of how to assess user needs and meet user expectations regarding functionality and usability of the website. New marketing approaches for the WWW are outlined, and the nature of communication on the WWW is explored.

Establishing an effective WWW presence is vital for any company wishing to conduct electronic commerce. A WWW presence represents a company's public image on the internet. It is important that such a presence conveys the right image to all the major stakeholders. These include consumers, suppliers, stockholders, and the general public. The growth of the internet has increased the importance of establishing a company's WWW presence – it may be the only point of contact which a consumer has with a company. Furthermore, if a company does not have a physical location, for example high street retail outlets, then its presence on the internet also represents its presence in the real world.

Revenue models

A useful way to think about electronic commerce implementations is to consider how they can generate revenue. However, it is important to remember that not all electronic commerce initiatives have the goal of providing revenue; some are undertaken to reduce costs or improve customer service.

Web catalogue revenue models

In this revenue model, the seller establishes a brand image, and then uses the strength of that image to sell through printed catalogues mailed to prospective buyers. Buyers place orders by mail or by calling a telephone number provided. This revenue model, which is often called the mail order or catalogue model, has proven to be successful for a wide variety of consumer items, including clothing, computers, electronics, household goods, and gifts.

When a company of this type wishes to enter the e-commerce market, they transfer or supplement their catalogue with an online version. When the catalogue model is expanded in this way, it is often called the *web catalogue revenue model*.

Digital content revenue models

The web is a new and highly efficient distribution mechanism for firms that own written information (words or numbers) or rights to that information. For example, LexisNexis began as a legal research tool, and it has been available as an online product for years. Today, LexisNexis offers a variety of information services, including legal information, corporate information, government information, news, and resources for academic libraries.

One of the first academic organizations to make the transition to electronic distribution on the web was (not surprisingly) the Association for Computer Machinery (ACM). The ACM Digital Library offers subscriptions to electronic versions of its journals to its members and to library and institutional subscribers. Academic publishing has always been a difficult business in which to make a profit because the base of potential subscribers is so small. Even the most highly regarded academic journals often have fewer than 2000 subscribers. To break even, academic journals must often charge each subscriber hundreds or even thousands of dollars per year. Electronic publishing eliminates the high costs of paper, printing, and delivery, and makes dissemination of research results more efficient and less expensive.

Advertising-supported revenue models

Most television channel output is enabled by an advertising-supported revenue model. Broadcasters provide free programming to an audience along with advertising messages. The advertising revenue is sufficient to support the operations of the network and the creation or purchase of the programs. Many observers of the web in its early growth period believed that the potential for internet advertising was tremendous. Web advertising grew from essentially zero in 1994 to $2 billion in 1998. However, web advertising was flat or declining in the years 2000 through 2002. Since then, web advertising has once again started to grow, but at much slower rates than in the early years of the web.

The overall success of online advertising has been hampered by two major problems. First, no consensus has emerged on how to measure and charge for site visitor views. It has been difficult for web advertisers to develop a standard for advertising charges because interaction with the web can be measured in a multiple of complex ways. Interaction with a website may be measured in terms of number of visitors, number of unique visitors, number of click-throughs, and other attributes of visitor behaviour.

In addition to the number of visitors or page views, *stickiness* is a critical element in creating a presence that attracts advertisers. If a website is sticky, people will spend more time on it, visit it often and bookmark it (add it to their list of favourite websites).

Learning activity

What do you think makes a website *sticky*? Consider the websites that you have bookmarked or listed as favourites. Why do you favour these websites compared with others that may contain similar material?

As most successful advertising on the web is targeted at very specific groups, the second problem is that very few websites have a sufficient number of visitors to interest large advertisers. The set of characteristics that marketers use to group visitors is called demographic information. This includes personal information such as address, age, gender, income level, type of job held, hobbies and religion.

Advertising-subscription mixed revenue models

In an advertising-subscription mixed revenue model, which has been used for many years by traditional print newspapers and magazines, subscribers pay a fee and accept some level of advertising. On websites that use the advertising-subscription revenue model, subscribers are typically subjected to much less advertising than they are on advertising-supported sites. Firms have had varying levels of success in applying this model and a number of companies have moved to or from this model over their lifetimes.

Two of the world's most distinguished newspapers, *The New York Times* and *The Wall Street Journal*, use a mixed advertising-subscription model. *The New York Times* version is mostly advertising supported, but the newspaper has experimented in recent years with charging fees for access to various parts of its site. In 2005, *The New York Times* began charging a fee for access to its Op Ed and news columns. The newspaper also charges for access to its premium crossword puzzle pages. *The New York Times* also provides a searchable archive of articles dating back to 1996 and charges a small fee for viewing any article older than one week. *The Wall Street Journal's* mixed model is weighted more heavily to subscription revenue. The site allows non-subscriber visitors to view the classified ads and certain stories from the newspaper, but most of the content is reserved for subscribers who pay an annual fee for access to the site. Visitors who already subscribe to the print edition are offered a reduced rate on subscriptions to the online edition.

Fee-for-transaction revenue models

In the fee-for-transaction revenue model, businesses offer services and charge a fee based on the number or size of transactions they process. Some of these services lend themselves well to operating on the web - companies can offer much of the personal service formerly provided by human agents, as the website can offer visitors similar information they would have previously heard from one of the company's phone operatives. If consumers are willing to enter transaction information into website forms, these sites can provide options and execute transactions much less expensively than traditional transaction service providers. The removal of an intermediary, such as a human agent, from a value chain is called *disintermediation*. The introduction of a new intermediary, such as a fee-for-transaction website, into a value chain is called *reintermediation*.

Fee-for-service revenue models

Companies are offering an increasing variety of services on the web for which they charge a fee. These are neither broker services nor services for which the charge is based on the number or size of transactions processed. The fee is based on the value of the service provided. These fee-for-service revenue models range from games and entertainment to financial advice and the professional services of accountants, lawyers, and physicians.

Revenue models in transition

Success on the web depends upon being willing and able to change and develop business structures as both technology and attitudes develop. Many companies have gone through transitions in their revenue models as they learn how to do business successfully on the web. As more people use the web to buy goods and services, and as the behaviour of those web users changes, companies often find that they must change their revenue models to meet the needs of those new and changing web users. Here are some examples:

Subscription to advertising-supported model

Microsoft founded its *Slate* magazine website as an upscale news and current events publication. Although *Slate* drew a wide readership and received acclaim for its incisive reporting and excellent writing, it was unable to draw a sufficient number of paid subscribers. At its peak, *Slate* had about 27,000 subscribers generating annual revenue of $500,000, which was far less than the cost of creating the content and maintaining the website. *Slate* is now operated as an advertising-supported site.

Advertising-supported to advertising-subscription mixed model

After operating for several years as an advertising-supported site, *Salon.com* now offers an optional subscription version of its site. The subscription offering was motivated by the company's inability to raise the additional money from investors that it needed to continue operations.

Advertising-supported to fee-for-services model

Xdrive Technologies opened its original advertising-supported website in 1999. Xdrive offered free disk storage space online to users. The users saw advertising on each page and had to provide personal information that allowed Xdrive to send targeted e-mail advertising to them. Its offering was very attractive to web users who had begun to accumulate large files, such as MP3 music files, and wanted to access those files from several computers in different locations.

After two years of offering free disk storage space, Xdrive found that it was unable to pay the costs of providing the service with the advertising revenue it had been able to generate. It switched to a subscription-supported model and began selling the service to business users as well as individuals.

Advertising-supported to subscription model

Northern Light was founded in August 1997 as a search engine with a twist. In addition to searching the web, it searched its own database of journal articles and other publications to which it had acquired

reproduction rights. Northern Light's revenue model was a combination of the advertising-supported model used by most other web search engines plus a fee-based information access service.

In January 2002, Northern Light decided that the advertising revenue it was earning from the ads it sold on search results pages was insufficient to justify continuing to offer that service. It stopped offering public access to its search engine and converted to a new revenue model that was primarily subscription supported. Northern Light's main revenue source in its new model is from annual subscriptions sold to large corporate clients.

Multiple transitions

Encyclopædia Britannica began its online expansion with two web-based offerings. The *Britannica Internet Guide* was a free web navigation aid that classified and rated information-laden websites. It featured reviews written by Britannica editors who also selected and indexed the sites. The company's other website*, Encyclopædia Britannica Online*, was available for a subscription fee or as part of the Encyclopædia Britannica CD package. Britannica used the free site to attract users to the paid subscription site.

By 1999, disappointed by low subscription sales, Britannica converted to a free, advertiser-supported site at no cost to the public. However, on the first day, the new site, *Britannica.com*, had over 15 million visitors, forcing Britannica to shut down for two weeks to upgrade its servers.

The Britannica.com site then offered the full content of the print edition in searchable form, plus access to the *Merriam-Webster's Collegiate Dictionary* and the *Britannica Book of the Year*. After two years of trying to generate a profit using this advertising-supported model, Britannica faced declining advertising revenues. In 2001, Britannica returned to a mixed model in which it offered free summaries of encyclopaedia articles and free access to the *Merriam-Webster's Collegiate Dictionary* on the web, with the full text of the encyclopaedia available for a subscription fee of $50 per year or $5 per month.

Learning activity

Suppose you have been employed by the owner of www.Dictionary.com to explore revenue generating alternatives. Currently the site is using an advertising supported revenue model. The company wishes you to consider each of the other revenue models and the potential of strategic alliances that might make sense for this site. Write a report of about 500 words in which you summarize your research and state your recommendations.

Revenue strategy issues

In this section, you will learn about some issues that arise when companies implement the various revenue models described, and how companies deal with those issues as they arise.

Channel conflict and cannibalisation

Companies that have existing sales outlets and distribution networks often worry that their websites will take away sales from those outlets and networks. For example, Levi Strauss & Company sells its Levi's jeans and other clothing products through department stores and other retail outlets. The company began selling jeans to consumers on its website in mid-1998. Many of the department stores and retail outlets that had been loyally selling Levi's products for many years and generating guaranteed revenue from their sale complained to the company that the website was now competing with them. In January 2000, Levi Strauss decided to stop selling products on its own website.

Such a *channel conflict* can occur whenever sales activities on a company's website interfere with its existing sales outlets. The problem is also called *cannibalisation* because the website's sales consume sales that would be made in the company's other sales channels.

Strategic alliances and channel distribution management

When two or more companies join forces to undertake an activity over a long period of time, they are said to create a strategic alliance. Companies form strategic alliances for many purposes. An increasing number of businesses are forming strategic alliances to sell on the web.

Creating an effective web presence

In the physical world, businesses have always created a presence by building stores, factories, warehouses, and office buildings. An organization's presence is the public image it conveys to its stakeholders. The stakeholders of a firm include its consumers, suppliers, employees, stockholders, neighbours, and the general public. Many companies tend not to worry much about the image they project until they grow to a significant size - until then, they are too focused on just surviving to spare the effort. On the web, presence can be much more important. Many consumers and other stakeholders of a web business know the company only through its web presence. Creating an effective web presence can be critical even for the smallest and newest firms operating on the web.

Identifying web presence goals

On the web, businesses and other organizations have the luxury of building their websites intentionally to create distinctive presences. Often, a firm's physical location needs to satisfy so many other business priorities before it can concentrate on conveying a good presence. However, online, a potential customer needs to interact with a firm's website to access their goods or services, so the website helps instantly create a first impression of the business. A good website design can provide many image-creation and image enhancing features very effectively - it can serve as a sales brochure, a product showroom, a financial report, an employment ad, and a consumer contact point. Each entity that establishes a web presence should decide: which task they wish their website to accomplish; which features the website can provide; and which of those features are the most important to include. Goals associated with the establishment of an effective WWW presence include:

- Creating a website that is attractive to many visitors.
- Creating a website with a positive image that is consistent with a company's established brand.
- Creating a website to reinforce already held positive images regarding a company.

However, businesses must not forget what online users want in return. In the early days of the internet many companies failed to recognise that consumers wanted the same level of reassurance when conducting electronic commerce that they got from dealing with real companies in the real world. Often details were not placed on websites regarding contacting the companies and prospective consumers often found that emailed queries did not receive a reply. This situation led to a loss of trust between online shoppers and companies. For such trust to be re-established companies wishing to create a WWW presence should include:

- A detailed history of the company including its aims, objectives and personnel.
- A mission statement outlining the strategic objectives of the company and how these objectives will be met.
- A brief statement of the financial position of the company and also its product portfolio.
- Several methods for contacting the organisation. These methods should include traditional communication channels such as a telephone number and postal addresses.

What is crucial for companies to remember is that consumers require an unrestricted online dialogue with a firm and its other stakeholders. It is imperative that companies provide meaningful ways for two-way communication to take place between themselves and their consumers.

Website usability

Research indicates that few businesses accomplish all of their goals for their websites in their current web presences. Even sites that succeed in achieving most of these goals often fail to provide sufficient interactive contact opportunities for site visitors. Most firms' websites give the general impression that the firm is too important and its employees are too busy to respond to inquiries. One of the main benefits to e-commerce consumers is the ability to quickly compare businesses offering similar services. If a consumer has a frustrating experience on one firm's website, within seconds they will go to another and the firm has lost a customer. Therefore it is beneficial for businesses to consider usability testing.

Usability testing is when a website is evaluated in terms of how easy it is to navigate to a particular piece of information. Usability testing can also be used to establish whether a particular feature on a website is easy to understand and efficient to use. Companies often aim to limit the amount of clicks required to access a particular piece of information to a set number such as three. A group of test users are then asked to navigate through the site to establish, for example, whether more than three clicks are required to access a product or service. If they are, the navigation path to that product or service is redesigned. Although usability testing will vary from website to website the following rules should be adhered to:

- A website should be designed around how visitors will want to travel through it, rather than around a company's organisational structure.
- A website should be designed to allow quick and easy access to as much information as possible.
- A website should not contain over exaggerated marketing claims or unproved comparisons between products offered on the website and those available elsewhere.
- So that it is accessible to various levels of browser software, the website should be designed so that browser software from older computers using slower connections can take advantage of its content - even if it means making multiple versions of the website.
- When designing a website, navigation and user controls should have a clear and consistent design - and where possible be supported by visual clues. It is also advisable to test the website using various colour combinations for text and graphics.

Meeting the needs of website visitors

Businesses that are successful on the web realize that every visitor to their websites is a potential consumer. People who visit a website seldom arrive by accident; they are there for a reason. However, the reasons people do visit may vary considerably – and this needs to be remembered when building the site. Thus, an important concern for businesses crafting web presences is the variation in visitor characteristics.

Although there are many reasons why visitors come to websites it is clear that a policy that aims to cater for different stakeholders is an effective policy. Companies must aim to have websites that are highly flexible, providing text and graphic versions that support frame based browsers and multiple information file formats. It is also important that the website allows users to access multiple levels of detail and information.

Trust and loyalty

When consumers buy any product from a seller, they are also buying an element of service. A seller can create value in a relationship with a consumer by nurturing consumers' trust and developing it into loyalty. Recent studies by business researchers have found that a 5 percent increase in consumer loyalty (measured for example in terms of the proportion of returning consumers) can yield profit increases ranging from 25 percent to 80 percent. Thus establishing customer loyalty can vastly increase revenue.

When a consumer has an experience with a seller who provides good service, that consumer begins to trust the seller. When a consumer has multiple good experiences with a seller, that consumer feels loyal to the seller. Thus, the repetition of satisfactory service can build consumer loyalty that helps prevent a consumer from seeking alternative sellers who offer lower prices. They may also recommend the seller to other potential customers.

Rating electronic commerce websites

Two companies routinely review electronic commerce websites for usability, consumer service, and other factors. Many people have found these review sites to be useful as they decide which sites to patronize. Unfortunately, one of the sites, *Gomez.com*, no longer publishes most of its scorecards for electronic commerce sites. It now sells the information it gathers to the companies that operate the websites and offers suggestions for improvements. *BizRate.com* provides a comparison shopping service and offers links to sites with low prices and good service ratings for specific products.

Consumer-centric website design

Putting the consumer at the centre of all site designs is called a *consumer-centric* approach to website design. Web designers can follow consumer-centric guidelines when creating a website that is intended to meet the specific needs of *consumers*, as opposed to all website visitors. These guidelines include the following:

Consumer-Centric Guidelines:	♦ Design the site around how visitors will navigate the links, not around the company's organizational structure. ♦ Allow visitors to access information quickly. ♦ Avoid using inflated marketing statements in product or service descriptions. ♦ Avoid the use of business jargon and terms that visitors might not understand. ♦ Build the site to work for visitors who are using the oldest browser software on the oldest computer connected through the lowest bandwidth connection—even if this means creating multiple versions of web pages. ♦ Be consistent in use of design features and colours. ♦ Make sure that navigation controls are clearly labelled or otherwise recognizable. ♦ Test text visibility on smaller monitors. ♦ Check to make sure that colour combinations do not impair viewing clarity for colour-blind visitors. ♦ Conduct usability test research by having potential site users navigate through several versions of the site.

Connecting with consumers

An important element of a corporate web presence is communicating with site visitors who are consumers or potential consumers. In this section, you will learn how websites can help firms identify and successfully connect to consumers.

The nature of communication on the web

In business, there are two general ways of identifying and reaching consumers: personal contact and mass media. These two approaches are often called communication modes because they each involve a characteristic way (or mode) of conveying information from one person to another (or communicating). In the personal contact model, the firm's employees individually search for, qualify, and contact potential consumers. This personal contact approach to identifying and reaching consumers is sometimes called prospecting. In the mass media approach, firms prepare advertising and promotional materials about the firm and its products or services. They then deliver these messages to potential consumers by broadcasting them on television or radio, printing them in newspapers or magazines, posting them on highway billboards, or mailing them.

An effective website is a combination of the mass media and personal contact models.

Material available only to students registered on this module.

Learning activity

Find a website that you think is successful in creating an effective web presence. Why do you think this website is good? Now find a website that in your opinion is not creating an effective web presence. What are the problems with this website and how could they be resolved?

Measuring website effectiveness

In traditional commerce, there are many different established methods for measuring how effective businesses are when communicating with potential consumers. Approaches include estimates of audience size, response rate, enquiry rate and sales. However, in e-commerce, such measurements are far more difficult to establish. This is because people may visit a site for many different reasons. The visitor is in control over which messages are viewed as they choose which links to follow. Recently, however, several different methods have been used to determine the amount of traffic generated by a website. These measurements include:

- A *visit* is defined to be when a user requests a page from a website. Further pages requested by the user over a given period of time (i.e. five minutes) are counted as part of the visit.
- A *trial visit* is defined to be the first time a user loads a website. After this initial visit all other visits are referred to as *repeat visits.*
- An *advertising view* is defined as being when a page is loaded that contains an advertisement or promotional banner.
- The *click through rate* is defined by the number of times an advertisement is clicked in order to view further details of the product or service being advertised.

Review questions

True/False questions

Indicate whether each of the following statements is true or false.

____ 1. Most web catalogue retailers do not have return policies that allow consumers to return unused merchandise for any reason.

____ 2. Consumer service is usually not a problem for most electronic commerce sites.

____ 3. Firms who own intellectual property or rights to that property have not embraced the web as an efficient distribution mechanism.

____ 4. Most successful advertising on the web is targeted to very specific groups.

____ 5. People spend less time at a sticky website and are thus exposed to very little advertising.

____ 6. Websites that specialize in providing only classified advertising do not have profit potential.

____ 7. Any product that is likely to be useful after the original buyer uses it provides the potential for a classified advertising site.

____ 8. People who visit a website usually arrive by accident.

____ 9. Gift retailers on the web use the advertising-supported revenue model.

____ 10. A large number of websites have sufficient numbers of visitors to attract large advertisers.

Multiple choice questions

Identify the choice that best completes the statement or answers the question.

____11. One problem that the web presents for clothing retailers of all types is that ____.
a. consumers are unwilling to buy clothing on-line
b. colour settings on computer monitors vary widely
c. the web catalogue revenue model is not flexible
d. online retail sales are not cost effective

____ 12. The ____ of a website is its ability to keep visitors at the site and to attract repeat visitors.
a. image
b. presence
c. stickiness
d. usability

____ 13. Network television in the United States uses the ____ revenue model.
a. advertising-supported
b. advertising-subscription mixed
c. fee-for-service
d. information sales

____ 14. A website that offers insurance policy information, comparisons, and sales is ____.
a. YouDecide.com
b. Orbitz
c. EBSCO
d. Northern Light

____ 15. The ____ is an industry group that tracks computer and video game use.
a. Consumers Union c. ICANN
b. ACM d. Entertainment Software Association

____ 16. ____ have been one of the main forces preventing U.S. professionals from extending their practices on the web.
a. Catalogue models c. Fulfilment managers
b. State laws d. Stakeholders

____ 17. One of the best ways to accommodate a broad range of visitor needs is to build ____ into the website's interface.
a. flexibility c. conflict
b. virtual models d. presence

____ 18. Online banks that have ____ features allow visitors to view all of their bills.
a. demographic information c. account aggregation
b. reintermediation d. bill presentment

____ 19. An effective ____ can be critical even for the smallest and newest firms operating on the web.
a. E-zine c. disintermediation
b. virtual model d. web presence

____ 20. A key goal for many not-for-profit organizations is ____.
a. account aggregation c. bill presentment
b. information dissemination d. cannibalization

Essay questions

21. An effective site is one that creates an attractive presence that meets the objectives of the business or organization. List at least five common objectives.

22. List at least five reasons why people visit websites.

23. List five goals that businesses should meet when constructing a website, so that it successfully conveys an integrated image and offers information to potential consumers.

24. What are the guidelines that must be followed by web designers when creating a website that is intended to meet the specific needs of consumers?

25. What is the difference between the personal contact model of communicating on the web and the mass market approach?

11 Answers for multiple choice, true/false and essay questions

SUBJECT GUIDE CHAPTER 1
ANSWER SECTION

TRUE/FALSE

1. ANS: T
2. ANS: F
3. ANS: T
4. ANS: T
5. ANS: T
6. ANS: T
7. ANS: T
8. ANS: F
9. ANS: F
10. ANS: F

MULTIPLE CHOICE

11. ANS: B
12. ANS: A
13. ANS: A
14. ANS: D
15. ANS: D
16. ANS: B
17. ANS: A
18. ANS: B
19. ANS: A
20. ANS: C

ESSAY

Main points that need to be included are:

21. ANS:
    The following business processes are well suited to electronic commerce:
    Sale/purchase of books and CDs and other commodities, online delivery of software, sale/purchase of travel services, online shipment tracking, and sale/purchase of investment and insurance products.

22. ANS:
Transaction costs are the total of all costs that a buyer and a seller incur as they gather information and negotiate a purchase-sale transaction. Although brokerage fees and sales commissions can be a part of transaction costs, the cost of information search and acquisition is often far larger. Another significant component of transaction costs can be the investment a seller makes in equipment or in the hiring of skilled employees to supply the product or service to the buyer.
23. ANS:
For each business unit, the primary activities are as follows: 1) identify customers, 2) design, 3) purchase materials and supplies, 4) manufacture product or create service, 5) market and sell, 6) deliver, and 7) provide after-sale service and support. The support activities include: 1) finance and administration, 2) human resources, and 3) technology development.
24. ANS:
Strengths

What does the company do well?
Is the company strong in its market?
Does the company have a strong sense of purpose and the culture to support that purpose?

Weaknesses

What does the company do poorly?
What problems could be avoided?
Does the company have serious financial liabilities?
25. ANS:
Consumer shopping on the Web, often called business-to-consumer (or B2C).
Transactions conducted between businesses on the Web, often called business-to-business (or B2B)
Transactions and business processes that companies, governments, and other organizations undertake on the Internet to support selling and purchasing activities.

SUBJECT GUIDE CHAPTER 2
ANSWER SECTION

TRUE/FALSE

1. ANS: T
2. ANS: T
3. ANS: T
4. ANS: T
5. ANS: T
6. ANS: F
7. ANS: F
8. ANS: F
9. ANS: F
10. ANS: T

MULTIPLE CHOICE

11. ANS: D
12. ANS: C

13. ANS: B
14. ANS: D
15. ANS: C
16. ANS: A
17. ANS: A
18. ANS: B
19. ANS: B
20. ANS: C

ESSAY

Main points that need to be included are:

21. ANS:
The computers that decide how to best forward each packet are called routing computers, router computers, routers, gateway computers (because they act as the gateway from a LAN or WAN to the Internet) or border routers (because they are located at the border between the organization and the Internet.) The programs on the routers that determine the best path contain rules called routing algorithms. The programs apply these algorithms to information they have stored in routing tables or configuration tables. This information includes lists of connections that lead to particular groups of other routers, rules that specify which connection to use first, and rules for handling instances of heavy packet traffic and network congestion.
22. ANS:
The open architecture philosophy developed for the evolving ARPANET, which later became the core of the Internet, included the use of a common protocol for all computers connected to the Internet and four key rules for message handling: 1) Independent networks should not require any internal changes to be connected to the network, 2) Packets that do not arrive at their destinations must be retransmitted from their source network, 3) Router computers act as receive-and-forward devices; they do not retain information about the packets that they handle, and 4) No global control exists over the network.
23. ANS:
The TCP controls the disassembly of a message or a file into packets before it is transmitted over the Internet, and it controls the reassembly of those packets into their original formats when they reach their destinations. The IP specifies the addressing details for each packet, labeling each with the packet's origination and destination addresses.
24. ANS:
A public network is any computer network or telecommunications network that is available to the public. The Internet is one example of a public network. A private network is a private, leased-line connection between two companies that physically connects their intranets to one another.
25. ANS:
One major advantage of Bluetooth technology is that it consumes very little power, which is an important consideration for mobile devices. Another advantage is that Bluetooth devices can discover each other and exchange information automatically. For example, a person using a laptop computer in a temporary office can print to a local Bluetooth-enabled printer without logging in to the network or installing software in either device. The printer and laptop computer electronically recognize each other as Bluetooth devices and immediately can begin exchanging information.

SUBJECT GUIDE CHAPTER 3
ANSWER SECTION

TRUE/FALSE

1. ANS: F
2. ANS: F
3. ANS: F
4. ANS: T
5. ANS: F
6. ANS: F
7. ANS: T
8. ANS: F
9. ANS: F
10. ANS: F

MULTIPLE CHOICE

11. ANS: B
12. ANS: C
13. ANS: A
14. ANS: A
15. ANS: D
16. ANS: B
17. ANS: A
18. ANS: D
19. ANS: D
20. ANS: B

ESSAY

Main points that need to be included are:

21. ANS:
    1) Attracting visitors to the Web site, 2) Making the site interesting enough that visitors stay and explore, 3) Convincing visitors to follow the site's links to obtain information, 4) Creating an impression consistent with the organization's desired image, 5) Building a trusting relationship with visitors, 6) Reinforcing positive images that the visitor might already have about the organization, and 7) Encouraging visitors to return to the site.
22. ANS:
    Visitors arrive for many different reasons, including these: 1) Learning about products or services that the company offers, 2) Buying products or services that the company offers, 3) Obtaining information about warranty, service, or repair policies for products they purchased, 4) Obtaining general information about the company or organization, 5) Obtaining financial information for making an investment or credit granting decision, 6) Identifying the people who manage the company or organization, or 7) Obtaining contact information for a person or department in the organization.

23. ANS:
To be successful in conveying an integrated image and offering information to potential customers, businesses should try to meet the following goals when construction their Web sites: 1) Offer easily accessible facts about the organization, 2) Allow visitors to experience the site in different ways and at different levels, 3) Provide visitors with meaningful, two-way (interactive) communication link with the organization, 4) Sustain visitor attention and encourage return visits, and 5) Offer easily accessible information about products and services and how to use them.
24. ANS:
The guidelines include:

Design the site around how the visitors will navigate the links, not around the company's organizational structure.
Allow visitors to access information quickly.
Avoid using inflated marketing statements in product or service descriptions.
Avoid using business jargon and terms that visitors might not understand.
Build the site to work for visitors who are using the oldest browser software connection.
Be consistent in use of design features and colors.
Make sure that navigation controls are clearly labeled or otherwise recognizable.
Test text visibility on smaller monitors.
Check to make sure that color combinations do not impair viewing clarity for color-blind visitors.
Conduct usability tests by having potential site users navigate through several versions of the site.
25. ANS:
In the personal contact model, the firm's employees individually search for, qualify, and contact potential customers. In the mass media approach, firms prepare advertising and promotional materials about the firm and its products or services. They then deliver these messages to potential customers by broadcasting them on television or radio, printing them in newspapers or magazines, posting them on highway billboards, or mailing them.

SUBJECT GUIDE CHAPTER 4
ANSWER SECTION

TRUE/FALSE

1. ANS: T
2. ANS: F
3. ANS: F
4. ANS: F
5. ANS: T
6. ANS: F
7. ANS: F
8. ANS: F
9. ANS: T
10. ANS: T

MULTIPLE CHOICE

11. ANS: C
12. ANS: A
13. ANS: A