NATIONAL OPEN UNIVERSITY OF NIGERIA

SCHOOL OF SCIENCE AND TECHNOLOGY

COURSE CODE: CIT 415

COURSE TITLE: INTRODUCTION TO E-COMMERCE

COURSE GUIDE

CIT 415
INTRODUCTION TO E-COMMERCE

Course Team Adaora Obayi (Course Developer/Writer) - UNN
Prof. Afolabi Adebanjo (Programme Leader)- NOUN
Vivian Nwaocha (Course Coordinator) - NOUN

NATIONAL OPEN UNIVERSITY OF NIGERIA

National Open University of Nigeria
Headquarters
14/16 Ahmadu Bello Way
Victoria Island, Lagos

Abuja Office
No. 5 Dar es Salaam Street
Off Aminu Kano Crescent
Wuse II, Abuja

e-mail: centralinfo@nou.edu.ng
URL: www.nou.edu.ng

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INTRODUCTION

CIT 415: Introduction to E-Commerce is a three-unit course for undergraduates in B.Sc. Computer Science and Communication Technology. The course is divided into 6 modules and 21 study units. It will introduce you to the concept of E-commerce and its benefits and limitations in our everyday lives. The course also provides information on the basic concept and definitions of E-commerce, understanding E-commerce and E-business, techniques and methodologies for E-commerce websites, product catalogues, processing order, managing a shopping cart and finally completing the purchasing process and tracking shoppers' information.

At the end of this course, it is expected that you should be able to understand, explain and be adequately equipped with a comprehensive knowledge of e-commerce.

The Course Guide therefore gives you an overview of what the course is all about, the textbooks and other course materials to be referenced, what you are expected to know in each unit, and how to work through the course material. It suggests the general strategy to be adopted and also emphasises the need for Self-Assessment and Tutor-Marked Assignment. There are also tutorial classes that are linked to this course and you are advised to attend.

WHAT YOU WILL LEARN IN THIS COURSE

The overall aim of this course, **CIT 415**, is to boost your knowledge of E-commerce and the various concepts associated with it. In the course of your studies, you will be equipped with definitions of common terms, characteristics and applications of e-commerce systems. You will also learn about product catalogue, shopping cart and how to process orders in e-commerce.

COURSE AIM

This course aims to give you an in-depth understanding of E-commerce. It is hoped that the knowledge would enhance you expertise in E-commerce.

COURSE OBJECTIVES

It is pertinent to note that each unit has precise objectives. You should learn them carefully before proceeding to subsequent units. Therefore, it may be useful to refer to these objectives in the course of your study of the unit to assess your progress. You should always look at the unit objectives after completing a unit. In this way, you can be sure that you have done what is required of you by the end of the unit. However, below are overall objectives of this course. On successful completion of this course, you should be able to:

- explain the various definitions, common terminologies, types and technologies of E-commerce
- briefly explain the benefits and limitations of E-commerce
- explain some few features of a successful E-commerce
- define and explain the concepts of E-business and E-commerce
- distinguish between E-business and E-commerce
- describe the e-commerce web design
- explain the techniques for web design
- describe the methodologies for developing E-commerce web sites.
- discuss the security issues in web design
- highlight the ways to improve the usability of E-commerce websites
- discuss about the planning and development of e-commerce catalogues
- process an E-commerce order, different order statuses and order fulfillment issues
- discuss the concept of shopping cart and mention the various types of shopping carts
- list and explain the functions of a shopping cart
- explain the various payment gateways for shopping carts
- mention the problems of shopping cart and how to avoid such problems
- explain how to secure your e-commerce systems

WORKING THROUGH THIS COURSE

To complete this course, you are required to study all the units, the recommended text books, and other relevant materials. Each unit contains some tutor-marked assignments, and at some point in this course, you are required to submit the tutor- marked assignments. There is also a final examination at the end of this course. Stated below are the components of this course and what you have to do.

COURSE MATERIALS

The major components of the course are:

1. Course Guide
2. Study Units
3. Text Books
4. Assignment File
5. Presentation Schedule

STUDY UNITS

There are 21 study units and 6 modules in this course. They are:

Module 1 Introduction of Basic Concepts and Definitions

Unit 1 Basic Definitions of E-Commerce
Unit 2 Types of E-Commerce
Unit 3 Benefits of E-Commerce
Unit 4 Key Ideas in E-Commerce

Module 2 Understanding e- Business and e- Commerce

Unit 1 Concepts of E-Business and E-Commerce
Unit 2 Facilities that Support E-Commerce and E-Business Systems
Unit 3 Issues and Problems that Affect E-Commerce and E-Business Development

Module 3 Website Development for e-Commerce

Unit 1 Introduction and Techniques for Web Design
Unit 2 Methodologies for Developing E-Commerce Websites
Unit 3 Managing Websites for E-Commerce
Unit 4 Creating and Maintaining a Successful Web Presence

Module 4 Product Catalogue and Processing Orders

Unit 1 E-commerce Catalog Development
Unit 2 Processing Orders in E-Commerce
Unit 3 Online Shop

Module 5 Shopping Cart

Unit 1 Introduction to Shopping Cart
Unit 2 Functions of a Shopping Cart

RECOMMENDED TEXTS

Bonnett, K. (2000). *An IBM Guide to Doing Business on the Internet.* U.S.A.:McGraw-Hill.

Cameron, D. (1997). *Electronic Commerce: The New Business Platform for the Internet*. Computer Technology Research.

Choi, *et al*. (1997). *The Economics of Electronic Commerce*. Macmillan Technical Publications, p. 18.

Choi, S., Stahl, D.O & Whinstone, A.B. (1997). *The Economics of Electronic Commerce*. Indianapolis, In: Macmillan.

Coulouris, G., Dollimore J. & Kindberg, T. (2001). *Distributed Systems Concepts and Design*. Harlow: Addison-Wesley.

Cronin, M. J. (2000). *Unchained Value: The New Logic of Digital Business.* U.S.A.: Harvard Business School Press.

Fournier, R. (1998). *A Methodology for Client Server and Web Application Development*. Yourdon Press.

Howcroft, D & Carroll, J. (2000). *A Proposed Methodology for Web Development.* Proceedings of the European Conference on Information Systems, Vienna, pp. 290-297.

Ince, D. (2003). *Developing Internet Applications.* Pearson Education Limited.

Kalakota, R. & Robinson M. (1999) *e-Business, Roadmap for Success*. Reading, MA: Addison-Wesley.

Kalakota, R. & Whinston A.B. (1997). *Electronic Commerce: A Manager's Guide*. Addison Wesley Longman, Inc.40

Kalakota, R. & Whinston,A.B.(1996)..*Frontiers of Electronic Commerce*. Addison-Wesley.

Kalakota, R. & Whinstone A.B. (1997). *Electronic Commerce*. Reading, MA: Addison-Wesley.

Kalakota, R. (1999) *E-Business*. Reading, MA: Addison-Wesley.

Kleindl, B. A. (2003). *Strategic Electronic Marketing: Managing e-business,* Thomson Learning, Mason, USA.

Korper, S. & Ellis J. (2000). *The E-Commerce Book: Building the E-Empire*. Morgan Kaufmann.

Kou, W. (2003). *Payment Technologies for E-Commerce*. Springer.

Lallana, E., Quimbo, R.S. & Zorayda R.B.A.(2000). *E-Primer: An Introduction to E-commerce*. DAI-AGILE, a USAID-Funded Project.

Lamont, D. (2001*). Conquering the Wireless World: The Age of M-commerce.* United Kingdom: Capstone Publishing Inc.

Mann, C., Eckert S. E. & Knight S.C. (2000). *Global Electronic Commerce: A Policy Primer.* Washington DC: Institute for International Economics.

May, P. (2000). *The Business of Ecommerce*. Cambridge Press.

McFadyen, T.M. (2008). *eCommerce Best Practices*. McFadyen Solutions.

Plant, R. (2000). *eCommerce Formulation of Strategy.* U.S.A.: Prentice Hall Inc.

Rahman, S. (2000). *Electronic Commerce: Opportunities and Challenges.* IGI Global.

Reynolds, J. (2004). *The Complete E-Commerce book*. CMP.

Rich, J. (2008). *Design & Launch an eCommerce Business in a week*. Entrepreneur Press.

Rockwell, B. (1998). *Using The Internet To Compete in a Global Marketplace*. Wiley & Sons.

Rosen, A. (2000). T*he E-commerce Question and Answer Book: A Survival Guide for Business Managers.* American Management Association.

Schneider, G. (2010). *Electronic Commerce.* Course Technology.

Slawsky, J. H. & Zafar S. (2005). *Developing and Managing a Successful Payment Card*. Ashgate Publishing.

Smith, D. (2001). *The E-business Book: A Step-by-Step Guide to E-commerce and Beyond.* Princeton: Bloomberg Press.

Standing, C. (2000). *Internet Commerce Development.* Artech House Publishers, Boston.

These texts will be of enormous benefit to you in learning this course:

Timmers, P. (2000). *Electronic Commerce-Strategies and Models for Business-to-Business Trading*. John Wiley & Sons,

Treese, G. W. & Stewart, L. C. (1998). *Designing Systems For Internet Commerce.* Addison-Wesley. Trepper C.H. (2000). *E-Commerce Strategies*. Microsoft Press.

Turban, E., Lee, J., King D. & Chung, H.M. (1999). *Electronic Commerce: A Managerial Perspective.* Prentice Hall.

ASSIGNMENT FILE

The assignment file will be given to you in due course. In this file, you will find all the details of the work you must submit to your tutor for marking. The marks you obtain for these assignments will count towards the final mark for the course. Altogether, there are 21 tutor-marked assignments for this course.

PRESENTATION SCHEDULE

The presentation schedule included in this Course Guide provides you with important dates for completion of each tutor-marked assignment. You should therefore endeavor to meet the deadlines.

ASSESSMENT

There are two aspects to the assessment of this course. First, there are tutor- marked assignments and second, the written examination. Therefore, you are expected to take note of the facts, information and problem-solving gathered during the course. The tutor-marked assignments must be submitted to your tutor for formal assessment, in accordance to the deadline given. The work submitted will count for 30% of your total course mark. At the end of the course, you will need to sit for a final written examination. This examination will account for 70% of your total score.

TUTOR-MARKED ASSIGNMENT (TMA)

There are 21 TMAs in this course. You need to submit all the TMAs. The best three (3) will therefore be counted. When you have completed each assignment, send them to your tutor as soon as possible and make certain that it gets to your tutor on or before the stipulated deadline. If for any reason you cannot complete your assignment on time, contact your tutor before the assignment is due to discuss the possibility of extension. Extension will not be granted after the deadline, unless on extraordinary cases.

FINAL EXAMINATION AND GRADING

The final examination for CIT 415 will last for a period of 3 hours and have a value of 70% of the total course grade. The examination will consist of questions which reflect the self-assessment exercise and tutor-marked assignments that you have previously encountered. Furthermore, all areas of the course will be examined. It would be better to use the time between finishing the last unit and sitting for the examination, to revise the entire course. You might find it useful to review your TMAs and comment on them before the examination. The final examination covers information from all parts of the course.

COURSE MARKING SCHEME

The following table shows the course marking scheme

Table 1: Course Marking Scheme

ASSESSMENT	MARKS
Assignments 1-21	21 assignments, 30% for the best 3 Total = 10% X 3 = 30%
Final Examination	70% of overall course marks
Total	100% of Course Marks

OURSE OVERVIEW

This indicates the units, the number of weeks required to complete them and the assignments.

Table 2: Course Organiser

UNIT	**TITLE OF WORK**	**WEEKS ACTIVITY**	**ASSESSMENT (END OF UNIT)**
	Course Guide	Week 1	
MODULE 1	**INTRODUCTION OF BASIC CONCEPTS AND DEFINITIONS**		
UNIT 1	Basic Definitions of E-Commerce	Week 1	Assignment 1
UNIT 2	Types of E-Commerce	Week 2	Assignment 2
UNIT 3	Benefits of E-Commerce	Week 2	Assignment 3
UNIT 4	Key Ideas In E-Commerce	Week 4	Assignment 4
MODULE 2	**UNDERSTANDING E- BUSINESS AND E- COMMERCE**		
UNIT 1	Concepts of E-Business	Week 3	Assignment 5
UNIT 2	Facilities that Support E-Commerce and E-Business Systems	Week 4	Assignment6
UNIT 3	Issues and Problems that Affect E-Commerce and E-Business Development	Week 4	Assignment 7
MODULE 3	**WEBSITE DEVELOPMENT FOR E-COMMERCE**		
UNIT 1	Introduction and Techniques for Web Design	Week 5	Assignment 8
UNIT 2	Methodologies for Developing E-Commerce Websites	Week 6	Assignment 9
UNIT 3	Managing Websites for E-commerce	Week 7	Assignment 10
UNIT 4	Creating and Maintaining a Successful Web Presence	Week 7	Assignment 11
MODULE 4	**PRODUCT CATALOGUE AND PROCESSING ORDERS**		
UNIT 1	E-commerce Catalog Development	Week 8	Assignment 12
UNIT 2	Processing Orders in E-Commerce	Week 8	Assignment 13
UNIT 3	Online Shop	Week 9	Assignment 14
MODULE 5	**SHOPPING CART**		
UNIT 1	Introduction to Shopping Cart	Week 9	Assignment 15
UNIT 2	Functions of a Shopping Cart	Week 10	Assignment 16
UNIT 3	Payment Gateways for Shopping Carts	Week 10	Assignment 17
UNIT 4	Shopping Cart Problems	Week 11	Assignment 18
MODULE 6	**COMPLETING THE PURCHASING PROCESS AND TRACKING SHOPPERS INFORMATION**		
UNIT 1	Completing The Purchasing Process and Tracking Shoppers Information (I)	Week 12	Assignment 19
UNIT 2	Completing the Purchasing Process and Tracking Shoppers Information (II)	Week 12	Assignment 20
UNIT 3	Security in E-Commerce	Week 13 and 14	Assignment 21

HOW TO GET THE MOST FROM THIS COURSE

In distance learning, the study units replace the university lecturer. This is one of the huge advantages of distance learning mode. You can read and work through specially designed study materials at your own pace and at a time and place that is most convenient. Think of it as reading from the teacher, the study guide indicates what you ought to study, how to study it and the relevant texts to consult. You are provided with exercises at appropriate points, just as a lecturer might give you an in-class exercise. Each of the study units follows a common format. The first item is an introduction to the subject matter of the unit and how a particular unit is integrated with the other units and the course as a whole. Next to this is a set of learning objectives. These learning objectives are meant to guide your studies. The moment a unit is finished, you must go back and check whether you have achieved the objectives. If this is made a habit, then you will increase your chances of passing the course. The main body of the units also guides you through the required readings from other sources. This will usually be either from a set book or from other sources. Self-assessment exercises are provided throughout the unit, to aid personal studies and answers are provided at the end of the unit. Working through these self tests will help you to achieve the objectives of the unit and also prepare you for tutor-marked assignments and examinations. You should attempt each self test as you encounter them in the units.

The following are practical strategies for working through this Course

1. Read the Course Guide thoroughly
2. Organise a study schedule. Refer to the course overview for more details. Note the time you are expected to spend on each unit and how the assignment relates to the units. Important details, e.g. details of your tutorials and the date of the first day of the semester are available. You need to gather together all these information in one place such as a diary, a wall chart calendar or an organiser. Whatever method you choose, you should decide on and write in your own dates for working on each unit.
3. Once you have created your own study schedule, do everything you can to stick to it. The major reason that students fail is that they get behind with their course works. If you get into difficulties with your schedule, please let your tutor know before it is too late for help.
4. Turn to Unit 1 and read the introduction and the objectives for the unit.
5. Assemble the study materials. Information about what you need for a unit is given in the table of content at the beginning of each

unit. You will almost always need both the study unit you are working on and one of the materials recommended for further readings, on your desk at the same time.

6. Work through the unit, the content of the unit itself has been arranged to provide a sequence for you to follow. As you work through the unit, you will be encouraged to read from your set books.
7. Keep in mind that you will learn a lot by doing all your assignments carefully. They have been designed to help you meet the objectives of the course and will help you pass the examination.
8. Review the objectives of each study unit to confirm that you have achieved them. If you are not certain about any of the objectives, review the study material and consult your tutor.
9. When you are confident that you have achieved a unit's objectives, you can start on the next unit. Proceed unit by unit through the course and try to pace your study so that you can keep yourself on schedule.
10. When you have submitted an assignment to your tutor for marking, do not wait for its return before starting on the next unit. Keep to your schedule. When the assignment is returned, pay particular attention to your tutor's comment which is on the tutor-marked assignment form. Consult you tutor as soon as possible if you have any questions or problems.
11. After completing the last unit, review the course and prepare yourself for the final examination. Check that you have achieved the unit objectives (listed at the beginning of each unit) and the course objectives (listed in this course guide).

FACILITATION/TUTORS AND TUTORIALS

There are eight (8) hours of tutorial provided in support of this course. You will be notified of the dates, time and location together with the name and phone number of your tutor as soon as you are allocated a tutorial group.

Your tutor will mark and comment on your assignments, keep a close watch on your progress and on any difficulties you might encounter and provide assistance to you during the course. You must mail your tutor-marked assignment to your tutor well before the due date. At least two working days are required for this purpose. They will be marked by your tutor and returned to you as soon as possible. Do not hesitate to contact your tutor by telephone, e-mail or discussion board if you need help. The following might be circumstances in which you would find help necessary: contact your tutor if:

- you do not understand any part of the study units or the assigned readings.
- you have difficulty with the self test or exercise.
- you have questions or problems with an assignment, with your tutor's comments on an assignment or with the grading of an assignment.

You should try your best to attend the tutorials. This is the only chance to have face-to-face contact with your tutor and ask questions which are answered instantly. You can raise any problem encountered in the course of your study. To gain the maximum benefit from the course tutorials, prepare a question list before attending them. You will learn a lot from participating in discussion actively. GOODLUCK!

MAIN CONTENT

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MODULE 1 INTRODUCTION OF BASIC CONCEPTS AND DEFINITIONS

UNIT 1 BASIC DEFINITIONS OF E-COMMERCE

CONTENTS

1.0 INTRODUCTION

Today, some considerable time after the so called 'dot com/internet revolution', electronic commerce (e-commerce) remains a relatively new, emerging and constantly changing area of business management and information technology. There has been and continues to be much publicity and discussion about e-commerce. However, there remains a sense of confusion, suspicion and misunderstanding surrounding the area, which has been exacerbated by the different contexts in which electronic commerce is used, coupled with the many related buzzwords and acronyms. This unit aims to consolidate the major definitions that have arisen from electronic commerce and to provide an understanding of its common terminologies and mention some technologies in e-commerce.

2.0 OBJECTIVES

At the end of this unit, you should be able to:

- explain the various definitions of e-commerce
- discuss some common terminologies in e-commerce

- discuss some e-commerce technologies.

3.0 MAIN CONTENT

3.1 Various Definitions of E-Commerce

In order to understand electronic commerce, it is important to identify the different terms that are used, and to assess their origin and usage. 'Electronic commerce is sharing business information, maintaining business relationships and conducting business transactions by means of telecommunications networks'. In its purest form, electronic commerce has existed for over 40 years, originating from the electronic transmission of messages during the Berlin airlift in 1948. From this, Electronic Data Interchange (EDI) was the next stage of e-commerce development. In the 1960s, a cooperative effort between industry groups produced a first attempt at common electronic data formats. The formats, however, were only for purchasing, transportation and finance data, and were used primarily for intra-industry transactions. It was not until the late 1970s that work began for National Electronic Data Interchange (EDI) standards, which developed well into the early 1990s.

EDI is the electronic transfer of a standardised business transaction between a sender and receiver computer, over some kind of private network or Value Added Network (VAN). Both sides would have to have the same application software and the data would be exchanged in an extremely rigorous format. In sectors such as retail, automotive, defense and heavy manufacturing, EDI was developed to integrate information across larger parts of an organisation's value chain from design to maintenance so that manufacturers could share information with designers, maintenance and other partners and stakeholders. Before the widespread uptake and commercial use of the internet, the EDI system was very expensive to run mainly because of the high cost of the private networks. Thus, uptake was limited largely to cash-rich multinational corporations using their financial strength to pressure and persuade (with subsidies) smaller suppliers to implement EDI systems, often at a very high cost. By 1996, no more than 50,000 companies in Europe and 44,000 in the USA were using EDI, representing less than 1 per cent of the total number of companies in each of the respective continents. Electronic commerce has been re-defined by the dynamics of the internet and traditional e-commerce is rapidly moving to the internet. With the advent of the internet, the term e-commerce began to include:

1. electronic trading of physical goods and of intangibles such as information
2. all the steps involved in trade, such as on-line marketing, ordering payment and support for delivery

3. the electronic provision of services such as after sales support or on-line legal advice
4. electronic support for collaboration between companies such as collaborative on-line design and engineering or virtual business consultancy teams.

Some of the definitions of e-commerce often heard and found in publications and the media are:

- electronic commerce is where business transactions take place via telecommunications networks, especially the internet.
- electronic commerce describes the buying and selling of products, services, and information via computer networks including the internet.
- electronic commerce is about doing business electronically.
- e-commerce is defined as the conduct of a financial transaction by electronic means.

E-commerce is one of the most important facets of the Internet to have emerged in recent times. E-commerce or electronic commerce involves carrying out business over the Internet with the assistance of computers, which are linked to each other forming a network. To be specific, e-commerce is buying and selling of goods and services and transfer of funds through digital communications (i.e the internet especially the world wide web).

Electronic commerce or e-commerce refers to a wide range of online business activities for products and services. It also pertains to "any form of business transaction in which the parties interact electronically rather than by physical exchanges or direct physical contact."

E-commerce is the use of electronic communications and digital information processing technology in business transactions to create, transform, and redefine relationships for value creation between or among organisations, and between organisations and individuals.

E-commerce is usually associated with buying and selling over the Internet, or conducting any transaction involving the transfer of ownership or rights to use goods or services through a computer-mediated network.

3.1.1 Myths about E-Commerce

One of the myths about e-commerce is that it is a comparatively recent phenomenon. Even in the early days of the internet when connections between individual computers were achieved by hand dialing using a

telephone, there were a number of internet companies which had been set up to sell photographs and other graphic images of compromised ladies and gentlemen. The earliest e-commerce applications were those associated with pornographers; indeed, a number of commentators have opined that the demands made upon the internet by pornographers have speeded the development of a number of technologies such as streaming video and the deployment of new business models.

Another myth about e-commerce is that the development of e-commerce systems is radically different from other commercial systems. I would say that it is *somewhat* different in that you have to worry about many of the problems that occur with distributing processing in a network. However, many of the functions required in the majority of e-commerce systems can be found in their conventional counterparts. Indeed, many e-commerce systems which are fronted by web servers still contain computers which were common ten years ago and are programmed in languages such as COBOL and C–languages which are not automatically associated with internet software development. Much of the analyses required for an e-commerce system are the same that you would carry out for a conventional system and also quite a lot of the design; however, they do differ in that the design of such systems is a lot trickier, for example to guarantee response times from a collection of computers communicating over the internet is a tough task.

3.2 Common E-Commerce Terminologies

In e-commerce, a lot of terms are used. Below are some major terms used and their various definitions.

Ad Clicks

Number of times that a viewer clicks on an ad banner.

Address Verification

Process used by a credit card processor or other party to verify that a customer's ordering address matches their records.

Automated Clearing House

An ACH transaction is an electronic fund transfer through the Federal Reserve Bank from a checking or savings account

Authorisation

The process of checking the validity and available balance of a customer's credit card before the transaction can be accepted.

Bandwidth

The amount of information (web pages, text, graphics, video, sound, etc) that is downloaded through a connection.

Banner

An interactive ad placed on a webpage that is linked to an external advertiser's website or another internal page within the same website.

"Card Not Present" Merchant Account

An account that allows merchants to process credit cards without a face-to-face transaction with the purchaser.

Certificate Authority

A Certificate Authority (CA) is a third party which verifies the identity of merchants and their sites. The certificate authority issues a certificate (also called a digital certificate or an authentication certificate) to an applicant company, which can then put the certificate up on its site.

Commerce Server

This is the server that manages and maintains all transactional and backend data for a commerce website.

Cookies

Cookies collect information as a user surfs the web and feed the information back to a web server. An online vendor's site will send a cookie (which is most simply an identification number) to a user's computer, where it is stored in a file on the user's hard drive and serves as a digital identifier tag that notifies the vendor whenever that user re-enters the vendor's website.

Cross Promotion

This has to do with the promotion of a website through other traditional forms of advertising such as magazines, newspapers, radio, TV, and billboards, etc.

Delayed Settlement Processing

Once a transaction has been authorised, the merchant must ship the hard goods before a transaction can be settled. Delayed settlements are stored online until the merchant selects the transactions for settlement.

Digital Certificate

A Digital Certificate issued by a Certificate Authority certifies that a merchant and a particular website are connected, just as a photo on your driver's license connects your identity with your personal details. A digital certificate verifies to the shopper that the virtual store is actually associated with a physical address and phone number which can increase the shopper's confidence in the authenticity of the merchant.

Distribution Channel

The method through which a product is sold including retailers, catalogers, and internet commerce websites, etc.

Domain Name

The unique name of an internet website..

Download

The transfer of information from the internet to the browsing computer.

Drop Ship

The shipping of a product directly from the manufacturer to the customer without requiring inventory by the retailer.

Electronic Software Distribution

Software that can be purchased and downloaded directly from the internet.

Hit

Each time a Web server sends a file to a browser, a "hit" is recorded in the server file logs.

Home Page

The first page through which a viewer usually enters a website.

HTML

Hyper Text Markup Language is the standardised language which allows web browsers to interpret websites.

HTTP

Hyper Text Transfer Protocol is a protocol which allows computers to communicate with each other.

Keywords

Words that may be used by viewers searching for information. Keywords can be purchased from search engine companies so that an appropriate ad banner may be displayed when a viewer searches on a particular word.

Merchant Account

A "bank account" established with a payment processor for the settlement of credit card transactions. Any merchant who wants to take credit card orders must establish a merchant account. Internet merchants need a "Card Not Present Merchant Account.

“Off-Line Transaction Processing”

Capture of order and credit card information for later authorisation and transaction processing through a traditional card swipe terminal or through a computer.

Order Confirmation

An email message notifying a customer that an order has been received and will be processed.

Order Management System

A system that accepts orders and initiates a process that results in the outbound shipment of a finished good.

Real Time Credit Card Processing

On-line authorisation of a credit card number in real time informing the merchant that the card has been approved.

Settlement

Once the goods have been shipped to the customer, the merchant can key a transaction for settlement at which time the customer's credit card is charged for the transaction and the proceeds are deposited into the merchant account.

SSL

Secure Socket Layer is an encryption technology on the server that scrambles important data such as credit card numbers and order information when it is being stored or passed from one computer to another.

Shipping Confirmation

An email message that notifies a customer that an order has been shipped.

URL

Uniform Resource Locator which describes the "address" for a document on the internet.

Web Bugs (or pixel tags)

Web bugs are images--usually invisible because they are only one pixel wide by one pixel high--that are embedded in web pages and HTML-formatted emails. Advertising networks often use web bugs on web pages to add information to personal profiles stored in cookies and to collect statistics about how many hits the site gets.

3.3 E-Commerce Technology

A wide variety of e-commerce technology is available to beginning e-commerce merchants. It can overwhelming determine the best solutions for your e-commerce website. E-commerce technology options include:

- Affiliate marketing- a method of marketing where other websites can sign up to sell your products for a commission
- Content management- tools for managing additions and changes to website content
- Customer service management- the management of the relationships with customers, including the capture, storage and analysis of customer information
- E-mail marketing services- services that facilitate the sending of mass e-mails to your customer base. It is important that your customers give you permission to send e-mails to them- this is called permission based e-mailing
- Inventory management- the management of the inventories including ordering, quantities, release dates
- Mobile commerce- systems that can offer sales and promotions on mobile devices such as web enabled cell phones

- Payments processing- allows your e-commerce website to accept credit card and electronic check payments in real time to help prevent fraud
- Search engine marketing- a set of internet marketing strategies that are designed to promote a website's visibility and web traffic
- Search tools- search systems that are specific to searching on your e-commerce website
- Shipping rates- systems that connect with existing shipping systems to provide exact shipping rates for selected products on your e-commerce site
- Web analytics- the collection, measurement and analysis of user activity on a website to understand and help achieve the intended objective of the website
- Web design- the design of the look and feel of your e-commerce website or the customisation of the look of an e-commerce system
- Web hosting-a web hosting company is a company that specialises in hosting web sites for other companies on their computers
- Website performance monitoring- systems that automatically check that your website is up and working

SELF- ASSESSMENT EXERCISE

Mention and explain extensively six e-commerce technologies you know.

4.0 CONCLUSION

'Electronic commerce is sharing business information, maintaining business relationships and conducting business transactions by means of telecommunications networks'. There are various terminologies associated with it and some of its technologies include: web analytics, affiliate marketing, content management, e-mail marketing services, mobile commerce, and search engine marketing e.t.c.

5.0 SUMMARY

In this unit, we examined the various definitions of e-commerce, common terminologies and finally e-commerce technologies. It is hoped that you understood the topics discussed. You may now attempt the questions below.

6.0 TUTOR-MARKED ASSIGNMENT

i. Give a detailed definition of e-commerce based on what you have learnt in this unit.
ii. Name and explain 4 e-commerce terminologies not mentioned in this unit.

7.0 REFERENCES/FURTHER READING

Cameron, D. (1997). *Electronic Commerce: The New Business Platform for the Internet*. Computer Technology Research.

Choi, *et al*. (1997). *The Economics of Electronic Commerce*. Macmillan Technical Publications, p. 18.

Choi, S., Stahl, D.O & Whinstone, A.B. (1997). *The Economics of Electronic Commerce*. Indianapolis, IN: Macmillan.

Coulouris, G., Dollimore J. & Kindberg, T. (2001). *Distributed Systems Concepts and Design*. Harlow: Addison-Wesley.

Cronin, M. J. (2000). *Unchained Value: The New Logic of Digital Business.* U.S.A.: Harvard Business School Press.

Fournier, R. (1998). *A Methodology for Client Server and Web Application Development*. Yourdon Press.

Howcroft, D & Carroll, J. (2000). *A Proposed Methodology for Web Development.* Proceedings of the European Conference on Information Systems, Vienna, pp. 290-297.

Ince, D. (2003). *Developing Internet Applications.* Pearson Education Limited.

Kalakota, R. & Robinson M. (1999) *e-Business, Roadmap for Success*. Reading, MA: Addison-Wesley.

Kalakota, R. & Whinston A.B. (1997). *Electronic Commerce: A Manager's Guide*. Addison Wesley Longman, Inc.40

Kalakota, R. & Whinston,A.B.(1996)..*Frontiers of Electronic Commerce*. Addison-Wesley.

Kalakota, R. & Whinstone A.B. (1997). *Electronic Commerce*. Reading, MA: Addison-Wesley.

Kalakota, R. (1999) *E-Business*. Reading, MA: Addison-Wesley.

Kleindl, B. A. (2003). *Strategic Electronic Marketing: Managing e-business,* Thomson Learning, Mason, USA.

Korper, S. & Ellis J. (2000). *The E-Commerce Book: Building the E-Empire*. Morgan Kaufmann.

Kou, W. (2003). *Payment Technologies for E-Commerce*. Springer.

Lallana, E., Quimbo, R.S. & Zorayda R.B.A.(2000). *E-Primer: An Introduction to E-commerce*. DAI-AGILE, a USAID-Funded Project.

Lamont, D. (2001*). Conquering the Wireless World: The Age of M-commerce.* United Kingdom: Capstone Publishing Inc.

Mann, C., Eckert S. E. & Knight S.C. (2000). *Global Electronic Commerce: A Policy Primer.* Washington DC: Institute for International Economics.

May, P. (2000). *The Business of E-commerce*. Cambridge Press.

McFadyen, T.M. (2008). *e-commerce Best Practices*. McFadyen Solutions.

Plant, R. (2000). *e-commerce Formulation of Strategy.* U.S.A.: Prentice Hall Inc.

Rahman, S. (2000). *Electronic Commerce: Opportunities and Challenges.* IGI Global.

Reynolds, J. (2004). *The Complete E-Commerce book.* CMP.

Rich, J. (2008). *Design & Launch an e-commerce Business in a week.* Entrepreneur Press.

Rockwell, B. (1998). *Using The Internet To Compete in a Global Marketplace*. Wiley & Sons.

Rosen, A. (2000). T*he E-commerce Question and Answer Book: A Survival Guide for Business Managers.* American Management Association.

Schneider, G. (2010). *Electronic Commerce.* Course Technology.

Slawsky, J. H. & Zafar S. (2005). *Developing and Managing a Successful Payment Card*. Ashgate Publishing.

Smith, D. (2001). *The E-business Book: A Step-by-Step Guide to E-commerce and Beyond.* Princeton: Bloomberg Press.

Standing, C. (2000). *Internet Commerce Development.* Artech House Publishers, Boston.

Timmers, P. (2000). *Electronic Commerce-Strategies and Models for Business-to-Business Trading*. John Wiley & Sons,

Treese, G. W. & Stewart, L. C. (1998). *Designing Systems For Internet Commerce.* Addison-Wesley.

Trepper C.H. (2000). *E-Commerce Strategies*. Microsoft Press.

Turban, E., Lee, J., King D. & Chung, H.M. (1999). *Electronic Commerce: A Managerial Perspective.* Prentice Hall.

www.mhhe.com

www.commerce.net

www.whatis.com/e-commerce

www.straight-on.com/e-commerce

www.ecworld.utexas.edu

UNIT 2 TYPES OF E-COMMERCE

CONTENTS

1.0 INTRODUCTION

In this unit, we shall discuss the various types of e-commerce.

2.0 OBJECTIVES

At the end of this unit, you should be able to:

- define the types of e-commerce
- explain with good examples the types of e-commerce.

3.0 MAIN CONTENT

3.1 Types of E-Commerce

The major types of e-commerce are:

1. Business-to-Business (B2B)
2. Business-to-Consumer (B2C)
3. Business-to-Government (B2G)
4. Consumer-to-Consumer (C2C)

1. Business-to-Business (b2b) E-Commerce

B2B e-commerce is simply defined as e-commerce between companies. This is the type of e-commerce that deals with relationships between and among businesses. About 80% of e-commerce is of this type, and most experts predict that B2B e-commerce will continue to grow faster than the B2C segment. The B2B market has two primary components: e-frastructure and e-markets. E-frastructure is the architecture of B2B, primarily consisting of the following:

- logistics- transportation, warehousing and distribution (e.g., Procter and Gamble)

- application service providers - deployment, hosting and management of packaged software from a central facility (e.g., Oracle and Linkshare)

- outsourcing of functions in the process of e-commerce, such as web-hosting, security and customer care solutions (e.g., outsourcing providers such as eShare, NetSales, iXL Enterprises and Universal Access)

- auction solutions software for the operation and maintenance of real-time auctions in the internet (e.g., Moai Technologies and OpenSite Technologies)

- content management software for the facilitation of website content management and delivery (e.g., Interwoven and ProcureNet)

- web-based commerce enablers (e.g., Commerce One, a browser-based, XML-enabled purchasing automation software).

E-markets are simply defined as websites where buyers and sellers interact with each other and conduct transactions.

The more common B2B examples and best practice models are IBM, Hewlett Packard (HP), Cisco and Dell. Cisco, for instance, receives over 90% of its product orders over the internet.

Most B2B applications are in the areas of supplier management (especially purchase order processing), inventory management (i.e., managing order-ship-bill cycles), distribution management (especially in the transmission of shipping documents), channel management (i.e., information dissemination on changes in operational conditions), and payment management (e.g., electronic payment systems or EPS).

The impact of B2B markets on the economy of developing countries is evident in the following:

- Transaction Costs: there are three cost areas that are significantly reduced through the conduct of B2B e-commerce. First is the reduction of search costs, as buyers need not go through multiple intermediaries to search for information about suppliers, products and prices as in a traditional supply chain. In terms of effort, time and money spent, the internet is a more efficient information channel than its traditional counterpart. In B2B markets, buyers

and sellers are gathered together into a single online trading community, reducing search costs even further. Second is the reduction in the costs of processing transactions (e.g. invoices, purchase orders and payment schemes), as B2B allows for the automation of transaction processes and therefore, the quick implementation of the same compared to other channels (such as the telephone and fax). Efficiency in trading processes and transactions is also enhanced through the B2B e-market's ability to process sales through online auctions. Third, online processing improves inventory management and logistics.

- Disintermediation: through B2B e-markets, suppliers are able to interact and transact directly with buyers, thereby eliminating intermediaries and distributors. However, new forms of intermediaries are emerging. For instance, e-markets themselves can be considered as intermediaries because they come between suppliers and customers in the supply chain.
- Transparency in Pricing: among the more evident benefits of e-markets is the increase in price transparency. The gathering of a large number of buyers and sellers in a single e-market reveals market price information and transaction processing to participants. The internet allows for the publication of information on a single purchase or transaction, making the information readily accessible and available to all members of the e-market. Increased price transparency has the effect of pulling down price differentials in the market. In this context, buyers are provided much more time to compare prices and make better buying decisions. Moreover, B2B e-markets expand borders for dynamic and negotiated pricing wherein multiple buyers and sellers collectively participate in price-setting and two-way auctions. In such environments, prices can be set through automatic matching of bids and offers. In the e-marketplace, the requirements of both buyers and sellers are thus aggregated to reach competitive prices, which are lower than those resulting from individual actions.
- Economies of Scale and Network Effects: the rapid growth of B2B e-markets creates traditional supply-side cost-based economies of scale. Furthermore, the bringing together of a significant number of buyers and sellers provides the demand-side economies of scale or network effects. Each additional incremental participant in the e-market creates value for all participants in the demand side. More participants form a critical mass, which is key in attracting more users to an e-market.

2. Business-to-Consumer (B2c) E-Commerce

Business-to-Consumer e-commerce, or commerce between companies and consumers, involves customers gathering information; purchasing physical goods (i.e., tangibles such as books or consumer products) or information goods (or goods of electronic material or digitised content, such as software, or e-books); and, for information goods, receiving products over an electronic network.

It is the second largest and the earliest form of e-commerce. Its origins can be traced to online retailing (or e-tailing). Thus, the more common B2C business models are the online retailing companies such as Amazon.com, Drugstore.com, Beyond.com, Barnes and Noble and ToysRus. Other B2C examples involving information goods are E-Trade and Travelocity.

The more common applications of this type of e-commerce are in the areas of purchasing products and information, and personal finance management, which pertain to the management of personal investments and finances with the use of online banking tools (e.g., Quicken).

B2C e-commerce reduces transactions costs (particularly search costs) by increasing consumer access to information and allowing consumers to find the most competitive price for a product or service. B2C e-commerce also reduces market entry barriers since the cost of putting up and maintaining a website is much cheaper than installing a “brick-and-mortar” structure for a firm. In the case of information goods, B2C e-commerce is even more attractive because it saves firms from factoring in the additional cost of a physical distribution network. Moreover, for countries with a growing and robust internet population, delivering information goods becomes increasingly feasible.

Types of B2C E-Commerce

Not all electronic commerce is about retail. Here is an extended list of types of B2C electronic commerce. When you are looking at sites you should try to identify which of the following is taking place:

1. Storefront (Retail) - products offered for sale with revenue on sale
2. Shopping Mall - multiple retailers with revenue from commission or space hire
3. Auction - vendors or buyers pay fixed price or percentage
4. Portal - aggregation of services and content with mixed revenues
5. Name your price - site offers buyers to sellers for commission or fixed fee

6. Comparison pricing - site compares retailers and receives introduction fee or advertising
7. Demand sensitive pricing - site combines group demand to buy in bulk
8. Free products or services - site makes money from collecting data from visitors
9. Business exchanges - site facilitates transactions between companies for a fee
10. Recruitment - job hunters or companies pay to meet
11. Affiliate schemes - site offers introduction fees to other sites
12. Service rental - site allows software services to be rented
13. Membership - fee for regular content or services
14. Gambling - lose money by paying fees
15. Classified advertising - advertise for a fee

Components of a System for a B2C Retailer

1. Shop front (web front-end, search, browse)
2. Product database (availability, product info, images, prices)
3. Payment system (to take credit cards securely)
4. Fulfillment system (to pick, pack and ship orders and handle returns)
5. Customer database (to record customer buying history)
6. Content management system (to manage store, add products, change prices etc)
7. Incentives and promotions mechanisms (related product, 2-for-1, 10% off e.g.)
8. Marketing systems (email newsletters, affiliates)
9. Customer service (complaints, out of stock, refunds).

3. Business-to-Government (b2g) E-Commerce

Business-to-government e-commerce or B2G is generally defined as commerce between companies and the public sector. It refers to the use of the internet for public procurement, licensing procedures, and other government-related operations. This kind of e-commerce has two features: first, the public sector assumes a pilot/leading role in establishing e-commerce; and second, it is assumed that the public sector has the greatest need for making its procurement system more effective. Web-based purchasing policies increase the transparency of the procurement process (and reduce the risk of irregularities). To date, however, the size of the B2G e-commerce market as a component of total e-commerce is insignificant, as government e-procurement systems remain undeveloped.

4. Consumer-to-Consumer (c2c) E-Commerce

Consumer-to-consumer e-commerce or C2C is simply commerce between private individuals or consumers.

This type of e-commerce is characterised by the growth of electronic marketplaces and online auctions, particularly in vertical industries where firms/businesses can bid for what they want from among multiple suppliers. It perhaps has the greatest potential for developing new markets.

This type of e-commerce comes in at least three forms:

- auctions facilitated at a portal, such as eBay, which allows online real-time bidding on items being sold in the web

- peer-to-peer systems, such as the Napster model (a protocol for sharing files between users used by chat forums similar to IRC) and other file exchange and later money exchange models

- classified ads at portal sites such as Excite Classifieds and eWanted (an interactive, online marketplace where buyers and sellers can negotiate and which features “Buyer Leads & Want Ads”).

Consumer-to-business (C2B) transactions involve reverse auctions, which empower the consumer to drive transactions.

There is little information on the relative size of global C2C e-commerce. However, C2C figures of popular C2C sites such as eBay and Napster indicate that this market is quite large. These sites produce millions of dollars in sales every day.

E-commerce can be said to consist of:

- E-tailing or "virtual storefronts" on websites with online catalogs, sometimes gathered into a "virtual mall"

As a place for direct retail shopping, with its 24-hour availability, a global reach, the ability to interact and provide custom information and ordering, and multimedia prospects, the web is rapidly becoming a multibillion dollar source of revenue for the world's businesses. A number of businesses already report considerable success.

- The gathering and use of demographic data through web contacts

In early 1999, it was widely recognised that because of the interactive nature of the internet, companies could gather data about prospects and customers in unprecedented amounts -through site registration, questionnaires, and as part of taking orders. The issue of whether data was being collected with the knowledge and permission of market subjects had been raised.

- Electronic Data Interchange (EDI)

EDI is the exchange of business data using an understood data format. It predates today's internet. EDI involves data exchange among parties that know each other well and make arrangements for one-to-one (or point-to-point) connection, usually dial-up.

- E-mail and fax and their use as media for reaching prospects and established customers (for example, with newsletters)

E-commerce is also conducted through the more limited electronic forms of communication called e-mail, facsimile or fax, and the emerging use of telephone calls over the internet. Most of this is business-to-business, with some companies attempting to use e-mail and fax for unsolicited ads (usually viewed as online junk mail or spam) to consumers and other business prospects. An increasing number of business websites offer e-mail newsletters for subscribers. A new trend is opt-in e-mail in which web users voluntarily sign up to receive e-mail, usually sponsored or containing ads, about product categories or other subjects they are interested in.

- Business-to-business buying and selling

Thousands of companies that sell products to other companies have discovered that the web provides not only a 24-hour-a-day showcase for their products but a quick way to reach the right people in a company for more information.

- The security of business transactions

Security includes authenticating business transactions, controlling access to resources such as web pages for registered or selected users, encrypting communications, and, in general, ensuring the privacy and effectiveness of transactions. Among the most widely-used security technologies is the Secure Sockets Layer (SSL).

SELF-ASSESSMENT EXERCISE

Briefly explain those things e-commerce consists of in your own words.

4.0 CONCLUSION

The major different types of e-commerce are:
Business-to-Business (B2B)
Business-to-Consumer (B2C)
Business-to-Government (B2G)
Consumer-to-Consumer (C2C)

5.0 SUMMARY

In this unit, we explained extensively the different types of e-commerce. Having understood the topics discussed, you may now attempt the questions below.

6.0 TUTOR-MARKED ASSIGNMENT

i. Name and explain the types of B2C e-commerce we have
ii. Write short notes on the forms of C2C e-commerce

7.0 REFERENCES/FURTHER READING

Cameron, D. (1997). *Electronic Commerce: The New Business Platform for the Internet*. Computer Technology Research.

Choi, S., Stahl, D.O & Whinstone, A.B. (1997). *The Economics of Electronic Commerce*. Indianapolis, IN: Macmillan.

Choi, *et al*. (1997). *The Economics of Electronic Commerce*. Macmillan Technical Publications, p. 18.

Coulouris, G., Dollimore J. & Kindberg, T. (2001). *Distributed Systems Concepts and Design*. Harlow: Addison-Wesley.

Cronin, M. J. (2000). *Unchained Value: The New Logic of Digital Business.* U.S.A.: Harvard Business School Press.

Fournier, R. (1998). *A Methodology for Client Server and Web Application Development*. Yourdon Press.

Howcroft, D & Carroll, J. (2000). *A Proposed Methodology for Web Development.* Proceedings of the European Conference on Information Systems, Vienna, pp. 290-297.

Ince, D. (2003). *Developing Internet Applications.* Pearson Education Limited.

Kalakota, R. (1999) *E-Business*. Reading, MA: Addison-Wesley.

Kalakota, R. & Robinson M. (1999) *e-Business, Roadmap for Success*. Reading, MA: Addison-Wesley.

Kalakota, R. & Whinstone A.B. (1997). *Electronic Commerce*. Reading, MA: Addison-Wesley.

Kalakota, R. & Whinston A.B. (1997). *Electronic Commerce: A Manager's Guide*. Addison Wesley Longman, Inc.40

Kalakota, R. & Whinston,A.B.(1996)..*Frontiers of Electronic Commerce*. Addison-Wesley.

Kleindl, B. A. (2003). *Strategic Electronic Marketing: Managing e-business,* Thomson Learning, Mason, USA.

Korper, S. & Ellis J. (2000). *The E-Commerce Book: Building the E-Empire*. Morgan Kaufmann.

Kou, W. (2003). *Payment Technologies for E-Commerce*. Springer.

Lallana, E., Quimbo, R.S. & Zorayda R.B.A.(2000). *E-Primer: An Introduction to E-commerce*. DAI-AGILE, a USAID-Funded Project.

Lamont, D. (2001). *Conquering the Wireless World: The Age of M-commerce.* United Kingdom: Capstone Publishing Inc.

Mann, C., Eckert S. E. & Knight S.C. (2000). *Global Electronic Commerce: A Policy Primer.* Washington DC: Institute for International Economics.

May, P. (2000). *The Business of E-commerce*. Cambridge Press.

McFadyen, T.M. (2008). *e-commerce Best Practices*. McFadyen Solutions.

Plant, R. (2000). *e-commerce Formulation of Strategy.* U.S.A.: Prentice Hall Inc.

Rahman, S. (2000). *Electronic Commerce: Opportunities and Challenges.* IGI Global.

Reynolds, J. (2004). *The Complete E-Commerce book*. CMP.

Rich, J. (2008). *Design & Launch an e-commerce Business in a week.* Entrepreneur Press.

Rockwell, B. (1998). *Using The Internet To Compete in a Global Marketplace*. Wiley & Sons.

Rosen, A. (2000). T*he E-commerce Question and Answer Book: A Survival Guide for Business Managers.* American Management Association.

Schneider, G. (2010). *Electronic Commerce.* Course Technology.

Slawsky, J. H. & Zafar S. (2005). *Developing and Managing a Successful Payment Card*. Ashgate Publishing.

Smith, D. (2001). *The E-business Book: A Step-by-Step Guide to E-commerce and Beyond.* Princeton: Bloomberg Press.

Standing, C. (2000). *Internet Commerce Development.* Artech House Publishers, Boston.

Timmers, P. (2000). *Electronic Commerce-Strategies and Models for Business-to-Business Trading*. John Wiley & Sons,

Treese, G. W. & Stewart, L. C. (1998). *Designing Systems For Internet Commerce.* Addison-Wesley.

Trepper C.H. (2000). *E-Commerce Strategies*. Microsoft Press.

Turban, E., Lee, J., King D. & Chung, H.M. (1999). *Electronic Commerce: A Managerial Perspective*. Prentice Hall.

www.mhhe.com
www.commerce.net
www.whatis.com/e-commerce
www.straight-on.com/e-commerce
www.ecworld.utexas.edu

UNIT 3 BENEFITS OF E-COMMERCE

CONTENTS

1.0 INTRODUCTION

The previous units examined what e-commerce is, and its types. But what are the benefits of e-commerce? What does it offer? And why do it? Like any conventional business, electronic commerce is also characterised by some inherent drawbacks. Let's have a look at some of these important advantages and disadvantages of electronic commerce.

2.0 OBJECTIVES

At the end of this unit, you should be able to:

- briefly explain the benefits of e-commerce
- explain the limitations of e-commerce
- discuss the role of government in developing e-commerce
- mention the forces fueling e-commerce
- explain the relevance of internet to e-commerce

3.0 MAIN CONTENT

3.1 Benefits of E-Commerce

The greatest and the most important benefit of e-commerce, is that it enables a business concern or individual to reach the global market. It caters to the demands of both the national and the international market,

as your business activities are no longer restricted by geographical boundaries. With the help of electronic commerce, even small enterprises can access the global market for selling and purchasing products and services.

Even time restrictions are nonexistent while conducting businesses, as e-commerce empowers one to execute business transactions 24 hours a day and even on holidays and weekends. This in turn significantly increases sales and profit.

The benefits of e-commerce can be seen to affect three major stakeholders: organisations, consumers and society.

3.1.1 Benefits of E-Commerce to Organisations

International marketplace: What used to be a single physical marketplace located in a geographical area has now become a borderless marketplace including national and international markets. By becoming e-commerce enabled, businesses now have access to people all around the world. In effect all e-commerce businesses have become virtual multinational corporations.

Operational cost savings: the cost of creating, processing, distributing, storing and retrieving paper-based information has decreased.

Mass customisation: e-commerce has revolutionised the way consumers buy goods and services. The pull-type processing allows for products and services to be customised to the customer's requirements. In the past when Ford first started making motor cars; customers could have any colour so long as it was black. Now customers can configure a car according to their specifications within minutes on-line through their website.

It enables reduced inventories and overheads by facilitating 'pull'-type supply chain management – this is based on collecting the customer order and then delivering through JIT (just-in-time) manufacturing. This is particularly beneficial for companies in the high technology sector, where stocks of components held could quickly become obsolete within months. For example, companies like Motorola (mobile phones), and Dell (computers) gather customer orders for a product, transmit them electronically to the manufacturing plant where they are manufactured according to the customer's specifications (like colour and features) and then sent to the customer within a few days.

Lower telecommunications cost: the internet is much cheaper than value added networks (VANs) which were based on leasing telephone lines

for the sole use of the organisation and its authorised partners. It is also cheaper to send a fax or e-mail via the internet than direct dialling.

Digitisation of products and processes: particularly in the case of software and music/video products, which can be downloaded or e-mailed directly to customers via the internet in digital or electronic format.

No more 24-hour-time constraints: businesses can be conducted by customers or suppliers at any time.

3.1.2 Benefits of E-Commerce to Consumers

24/7 access: Enables customers to shop or conduct other transactions 24 hours a day, all year round from almost any location. For example, checking balances, making payments, obtaining travel documents and other information. In one case, a pop star set up web cameras in every room in his house, so that he could check the status of his home by logging onto the internet when he was away from home on tour.

More choices: Customers not only have a whole range of products that they can choose from and customise, but also an international selection of suppliers.

Price comparisons: Customers can ‘shop’ around the world and conduct comparisons either directly by visiting different sites, or by visiting a single site where prices are aggregated from a number of providers and compared.

Improved delivery processes: This can range from the immediate delivery of digitised or electronic goods such as software or audio-visual files by downloading via the internet, to the on-line tracking of the progress of packages being delivered by mail or courier.

An environment of competition where substantial discounts can be found or value added, as different retailers vie for customers. It also allows many individual customers to aggregate their orders together into a single order presented to wholesalers or manufacturers and obtain a more competitive price (aggregate buying).

3.1.3 Benefits of E-Commerce to Society

It enables more flexible working practices, which enhances the quality of life for a whole host of people in society, enabling them to work from home. Not only is this more convenient and provides happier and less stressful working environments, it also potentially reduces

environmental pollution as fewer people have to travel to work regularly.

It connects people: Enables people in developing countries and rural areas to enjoy and access products, services, information and other people which otherwise would not be so easily available to them.

It facilitates delivery of public services: For example, health services available over the internet (on-line consultation with doctors or nurses), filing taxes over the internet through the inland revenue website.

Other benefits of e-commerce generally include:

- E-commerce allows people to carry out businesses without the barriers of time or distance. One can log on to the internet at any point of time, be it day or night and purchase or sell anything one desires at a single click of the mouse.
- The direct cost-of-sale for an order taken from a website is lower than through traditional means (retail, paper based), as there is no human interaction during the on-line electronic purchase order process. Also, electronic selling virtually eliminates processing errors, as well as being faster and more convenient for the visitor.
- E-commerce is ideal for niche products. Customers for such products are usually few. But in the vast market place i.e. the internet, even niche products could generate viable volumes.
- Another important benefit of e-commerce is that it is the cheapest means of doing business.
- The day-to-day pressures of the marketplace have played their part in reducing the opportunities for companies to invest in improving their competitive position. A mature market, increased competitions have all reduced the amount of money available to invest. If the selling price cannot be increased and the manufactured cost cannot be decreased then the difference can be in the way the business is carried out. E-commerce has provided the solution by decimating the costs, which are incurred.
- From the buyer's perspective e-commerce offers a lot of tangible advantages.
    - Reduction in buyer's sorting out time
    - Better buyer decisions
    - Less time is spent in resolving invoice and order discrepancies
    - Increased opportunities for buying alternative products.

- The strategic benefit of making a business 'e-commerce enabled' is that it helps reduce the delivery time, labour cost and the cost incurred in the following areas:

- document preparation
- error detection and correction
- reconciliation
- mail preparation
- telephone calling
- data entry
- overtime
- supervision expenses

- Operational benefits of e-commerce include reducing both the time and personnel required to complete business processes, and reducing strain on other resources. It is because of all these advantages that one can harness the power of e-commerce and convert a business to e-business by using powerful turnkey e-commerce solutions made available by e-business solution providers.

3.2 Limitations of E-Commerce

There was much hype surrounding the internet and e-commerce over the last few years of the twentieth century. Much of it promoted the internet and e-commerce as the panacea for all ills, which raises the question, are there any limitations of e-commerce?

Isaac Newton's third Law of Motion, 'for every action there is an equal and opposite reaction' suggests that for all the benefits there are limitations to e-commerce. These again will be dealt with according to the three major stakeholders – Organisations, Consumers and Society.

3.2.1 Limitations of E-Commerce to Organisations

Lack of sufficient system security, reliability, standards and communication protocols: There are numerous reports of websites and databases being hacked into, and security holes in software. For example, Microsoft has over the years issued many security notices and 'patches' for their software. Several banking and other business websites have experienced breaches in security where 'a technical oversight' or 'a fault in its systems' led to confidential client information becoming available to all.

Rapidly evolving and changing technology, so there is always a feeling of trying to 'catch up' and not be left behind.

Under pressure to innovate and develop business models to exploit the new opportunities which sometimes leads to strategies detrimental to the organisation. The ease with which business models can be copied and

emulated over the internet increases that pressure and curtail longer-term competitive advantage.
Facing increased competition from both national and international competitors often leads to price wars and subsequent unsustainable losses for the organisation.

Problems with compatibility of older and 'newer' technology: There are problems where older business systems cannot communicate with web-based and internet infrastructures, leading to some organisations running almost two independent systems where data cannot be shared. This often leads to having to invest in new systems or an infrastructure, which bridges the different systems. In both cases, this is both financially costly as well as disruptive to the efficient running of organisations.

3.2.2. Limitations of E-Commerce to Consumers

Computing equipment is needed for individuals to participate in the new 'digital' economy, which means an initial capital cost to customers.

A basic technical knowledge is required of both computing equipment and navigation of the internet and the world wide web.

Cost of access to the internet, whether dial-up or broadband tariffs.

Cost of computing equipment: Not just the initial cost of buying equipment but making sure that the technology is updated regularly to be compatible with the changing requirement of the Internet, websites and applications.

Lack of security and privacy of personal data: There is no real control of data that is collected over the web or internet. Data protection laws are not universal and so websites hosted in different countries may or may not have laws which protect privacy of personal data.

Physical contact and relationships are replaced by electronic processes: Customers are unable to touch and feel goods being sold on-line or gauge voices and reactions of human beings.

A lack of trust because they are interacting with faceless computers.

It is not suitable for perishable commodities like food items. People prefer to shop in the conventional way than to use e-commerce for purchasing food products. So e-commerce is not suitable for such business sectors.

The time period required for delivering physical products can also be quite significant in case of e-commerce. A lot of phone calls and e-mails may be required till you get your desired products. However, returning the product and getting a refund can be even more troublesome and time consuming than purchasing, in case if you are not satisfied with a particular product.

3.2.3 Limitations of E-Commerce to Society

Breakdown in human interaction: As people become more used to interacting electronically, there could be an erosion of personal and social skills which might eventually be detrimental to the world we live in where people are more comfortable interacting with a screen than face-to-face.

Social division: There is a potential danger that there will be an increase in the social divide between technical haves and have-nots. Hence, people who do not have technical skills become unable to secure better-paid jobs and could form an underclass with potentially dangerous implications for social stability.

Reliance on telecommunications infrastructure, power and IT skills, which in developing countries nullifies the benefits when power, advanced telecommunications infrastructures and IT skills are unavailable, scarce or underdeveloped.

Wasted resources: As new technology dates quickly, how do you dispose off all the old computers, keyboards, monitors, speakers and other hardware or software?

Facilitates Just-In-Time manufacturing: This could potentially cripple an economy in times of crisis, as stocks are kept to a minimum and delivery patterns are based on pre-set levels of stock which last for days rather than weeks.

Difficulty in policing the internet, which means that numerous crimes can be perpetrated and often go undetected. There is also an unpleasant rise in the availability and access of obscene material and ease with which pedophiles and others can entrap children by masquerading in chatrooms.

Thus, on evaluating the various pros and cons of electronic commerce, we can say that the benefits of e-commerce have the potential to outweigh the limitations. A proper strategy to address the technical issues and to build up customers trust in the system, can change the

present scenario and help e-commerce adapt to the changing needs of the world.

3.3 Role of Government in the Development of E-Commerce in Developing Countries

While it is generally agreed that the private sector should take the lead role in the development and use of e-commerce, the government plays an instrumental role in encouraging e-commerce growth through concrete practicable measures such as:
1. creating a favourable policy environment for e-commerce; and
2. becoming a leading-edge user of e-commerce and its applications in its operations, and a provider to citizens of e-government services, to encourage its mass use.

What is a favorable policy environment for e-commerce?

Among the public policy issues in electronic commerce that governments should take heed of are:

- "bridging the digital divide" or promoting access to inexpensive and easy access to information networks
- legal recognition of e-commerce transactions
- consumer protection from fraud
- protection of consumers' right to privacy
- legal protection against cracking (or unauthorised access to computer systems)
- protection of intellectual property.

Measures to address these issues must be included in any country's policy and legal framework for e-commerce. It is important that government adopt policies, laws and incentives that focus on promoting trust and confidence among e-commerce participants and developing a national framework that is compatible with international norms on e-commerce (covering for instance, contract enforcement, consumer protection, liability assignment, privacy protection, intellectual property rights, cross-border trade, and improvement of delivery infrastructure, among others).

How can government use e-commerce? Government can use e-commerce in the following ways:

- E-procurement: Government agencies should be able to trade electronically with all suppliers using open standards-through 'agency enablement' programs, 'supplier enablement' programs, and e-procurement information systems.

- Customs clearance: With the computerisation of Customs processes and operations(i.e., electronic submission, processing and electronic payment; and automated systems for data entry to integrate Customs tables, codes and pre-assessment), one can expect more predictable and more precise information on clearing time and delivery shipments, and increased legitimate revenues.
- Tax administration: This includes a system for electronic processing and transmission of tax return information, online issuances of tax clearances, permits, and licenses, and an electronic process registration of businesses and new taxpayers, among others. More often than not, the e-commerce initiatives of government are a barometer indicating whether or not the infrastructure supports e-commerce use by private firms. This means that if government is unable to engage in e-procurement, secure records online, or have customs fees remitted electronically, then the private sector will also have difficulties in e-commerce uptake. Virtually, the benefits from e-commerce accrue to the government, as the experiences of some countries.

3.4 What Forces Are Fueling E-Commerce?

There are at least three major forces fueling e-commerce: economic forces, marketing (and customer interaction) forces and technological (particularly multimedia convergence) forces.

Economic forces: One of the most evident benefits of e-commerce is economic efficiency resulting from the reduction in communications costs, low-cost technological infrastructure, speedier and more economic electronic transactions with suppliers, lower global information sharing and advertising costs, and cheaper customer service alternatives. Economic integration is either external or internal. External integration refers to the electronic networking of corporations, suppliers, customers/clients, and independent contractors into one community communicating in a virtual environment (with the internet as medium). Internal integration, on the other hand, is the networking of the various departments within a corporation, and of business operations and processes. This allows critical business information to be stored in a digital form that can be retrieved instantly and transmitted electronically. Internal integration is best exemplified by corporate intranets.

Marketing forces: Corporations are encouraged to use e-commerce in marketing and promotion to capture international markets, both big and small. The internet is likewise used as a medium for enhanced customer service and support. It is a lot easier for companies to provide their target consumers with more detailed product and service information using the internet.

Technological forces: The development of ICT is a key factor in the growth of e-commerce. For instance, technological advances in digitising content, compression and the promotion of open systems technology have paved the way for the convergence of communication services into one single platform. This in turn has made communication more efficient, faster, easier, and more economical as the need to set up separate networks for telephone services, television broadcast, cable television, and internet access is eliminated. From the standpoint of firms/businesses and consumers, having only one information provider means lower communications costs.

3.5 Components of a Typical Successful E-Commerce Transaction Loop

E-commerce does not refer merely to a firm putting up a website for the purpose of selling goods to buyers over the internet. For e-commerce to be a competitive alternative to traditional commercial transactions and for a firm to maximise the benefits of e-commerce, a number of technical as well as enabling issues have to be considered. A typical e-commerce transaction loop involves the following major players and corresponding requisites:

The *Seller* should have the following components:

- a corporate website with e-commerce capabilities (e.g., a secure transaction server);
- a corporate intranet so that orders are processed in an efficient manner; and
- IT-literate employees to manage the information flows and maintain the e-commerce system.

Transaction partners include:

- Banking institutions that offer transaction clearing services (e.g., processing credit card payments and electronic fund transfers);
- National and international freight companies to enable the movement of physical goods within, around and out of the country. For business-to-consumer transactions, the system must offer a means for cost-efficient transport of small packages (such that purchasing books over the internet, for example, is not prohibitively more expensive than buying from a local store); and
- Authentication authority that serves as a trusted third party to ensure the integrity and security of transactions.

Consumers (in a business-to-consumer transaction) who:

- form a critical mass of the population with access to the internet and disposable income enabling widespread use of credit cards; and
- possess a mindset for purchasing goods over the internet rather than by physically inspecting items.

Firms/Businesses (in a business-to-business transaction) that together form a critical mass of companies (especially within supply chains) with internet access and the capability to place and take orders over the Internet.

Government, to establish:

- a legal framework governing e-commerce transactions (including electronic documents, signatures, and the like); and
- legal institutions that would enforce the legal framework (i.e., laws and regulations) and protect consumers and businesses from fraud, among others.

And finally, *the internet*, the successful use of which depends on the following:

- a robust and reliable internet infrastructure; and
- a pricing structure that doesn't penalise consumers for spending time on and buying goods over the internet (e.g., a flat monthly charge for both ISP access and local phone calls).

For e-commerce to grow, the above requisites and factors have to be in place. The least developed factor is an impediment to the increased uptake of e-commerce as a whole. For instance, a country with an excellent internet infrastructure will not have high e-commerce figures if banks do not offer support and fulfillment services to e-commerce transactions. In countries that have significant e-commerce figures, a positive feedback loop reinforces each of these factors.

SELF-ASSESSMENT EXERCISE

Discuss the benefits and limitation of e-commerce as it pertains to:

i. The major stakeholders
ii. In general

3.6 The Relevance of Internet to E-Commerce

The internet allows people from all over the world to get connected inexpensively and reliably. As a technical infrastructure, it is a global collection of networks, connected to share information using a common set of protocols. Also, as a vast network of people and information, the internet is an enabler for e-commerce as it allows businesses to showcase and sell their products and services online and gives potential customers, prospects, and business partners access to information about these businesses and their products and services that would lead to purchase.

Before the internet was utilised for commercial purposes, companies used private networks-such as the EDI or Electronic Data Interchange-to transact business with each other. That was the early form of e-commerce. However, installing and maintaining private networks was very expensive. With the internet, e-commerce spread rapidly because of the lower costs involved and because the internet is based on open standards.

4.0 CONCLUSION

The benefits and limitations of e-commerce can be seen to affect three major stakeholders: organisations, consumers and society. The government has very important roles to play in e-commerce in the developing countries. We have three major forces fuelling e-commerce and lastly the internet plays major roles in e-commerce as we have seen in this unit.

5.0 SUMMARY

In this unit, we talked about the benefits and limitations of e-commerce, The role of government in developing countries pertaining e-commerce and how it can be used by the government, as well as forces that fuel e-commerce. We also discussed the major players in the e-commerce transaction loop and finally the relevance of internet to e-commerce. You can now answer the questions below hoping that you understood the topics discussed in this unit.

6.0 TUTOR-MARKED ASSIGNMENT

i. Discuss extensively with the aid of good examples, the role of government in developing e-commerce in developing countries especially in Nigeria.
ii. Explain who the major players are in e-commerce transaction loop.
iii. Write short notes on the relevance of internet to e-commerce.
iv. Discuss the favourable policy environment for e-commerce.

7.0 REFERENCES/FURTHER READING

Cameron, D. (1997). *Electronic Commerce: The New Business Platform for the Internet*. Computer Technology Research.

Choi, S., Stahl, D.O & Whinstone, A.B. (1997). *The Economics of Electronic Commerce*. Indianapolis, IN: Macmillan.

Choi, *et al*. (1997). *The Economics of Electronic Commerce*. Macmillan Technical Publications, p. 18.

Coulouris, G., Dollimore J. & Kindberg, T. (2001). *Distributed Systems Concepts and Design*. Harlow: Addison-Wesley.

Cronin, M. J. (2000). *Unchained Value: The New Logic of Digital Business.* U.S.A.: Harvard Business School Press.

Fournier, R. (1998). *A Methodology for Client Server and Web Application Development*. Yourdon Press.

Howcroft, D & Carroll, J. (2000). *A Proposed Methodology for Web Development.* Proceedings of the European Conference on Information Systems, Vienna, pp. 290-297.

Ince, D. (2003). *Developing Internet Applications.* Pearson Education Limited.

Kalakota, R. (1999) *E-Business*. Reading, MA: Addison-Wesley.

Kalakota, R. & Robinson M. (1999) *e-Business, Roadmap for Success*. Reading, MA: Addison-Wesley.

Kalakota, R. & Whinstone A.B. (1997). *Electronic Commerce*. Reading, MA: Addison-Wesley.

Kalakota, R. & Whinston A.B. (1997). *Electronic Commerce: A Manager's Guide*. Addison Wesley Longman, Inc.40

Kalakota, R. & Whinston,A.B.(1996)..*Frontiers of Electronic Commerce*. Addison-Wesley.

Kleindl, B. A. (2003). *Strategic Electronic Marketing: Managing e-business,* Thomson Learning, Mason, USA.

Korper, S. & Ellis J. (2000). *The E-Commerce Book: Building the E-Empire*. Morgan Kaufmann.

Kou, W. (2003). *Payment Technologies for E-Commerce*. Springer.

Lallana, E., Quimbo, R.S. & Zorayda R.B.A.(2000). *E-Primer: An Introduction to E-commerce*. DAI-AGILE, a USAID-Funded Project.

Lamont, D. (2001*). Conquering the Wireless World: The Age of M-commerce.* United Kingdom: Capstone Publishing Inc.

Mann, C., Eckert S. E. & Knight S.C. (2000). *Global Electronic Commerce: A Policy Primer.* Washington DC: Institute for International Economics.

May, P. (2000). *The Business of E-commerce*. Cambridge Press.

McFadyen, T.M. (2008). *e-commerce Best Practices*. McFadyen Solutions.

Plant, R. (2000). *e-commerce Formulation of Strategy.* U.S.A.: Prentice Hall Inc.

Rahman, S. (2000). *Electronic Commerce: Opportunities and Challenges.* IGI Global.

Reynolds, J. (2004). *The Complete E-Commerce book*. CMP.

Rich, J. (2008). *Design & Launch an e-commerce Business in a week.* Entrepreneur Press.

Rockwell, B. (1998). *Using The Internet To Compete in a Global Marketplace*. Wiley & Sons.

Rosen, A. (2000). T*he E-commerce Question and Answer Book: A Survival Guide for Business Managers.* American Management Association.

Schneider, G. (2010). *Electronic Commerce.* Course Technology.

Slawsky, J. H. & Zafar S. (2005). *Developing and Managing a Successful Payment Card*. Ashgate Publishing.

Smith, D. (2001). *The E-business Book: A Step-by-Step Guide to E-commerce and Beyond.* Princeton: Bloomberg Press.

Standing, C. (2000). *Internet Commerce Development.* Artech House Publishers, Boston.

Timmers, P. (2000). *Electronic Commerce-Strategies and Models for Business-to-Business Trading*. John Wiley & Sons,

Treese, G. W. & Stewart, L. C. (1998). *Designing Systems For Internet Commerce.* Addison-Wesley.

Trepper C.H. (2000). *E-Commerce Strategies*. Microsoft Press.

Turban, E., Lee, J., King D. & Chung, H.M. (1999). *Electronic Commerce: A Managerial Perspective.* Prentice Hall.

www.mhhe.com
www.commerce.net
www.whatis.com/e-commerce
www.straight-on.com/e-commerce
www.ecworld.utexas.edu

UNIT 4 KEY IDEAS IN E-COMMERCE

CONTENTS

1.0 INTRODUCTION

Before starting an e-commerce business you should have done some basic assignments to guide you in building a successful and reliable e-commerce business. This unit gives some important key ideas for starting and sustaining your e-business.

3.0 OBJECTIVES

At the end of this unit, you should be able to:

- briefly explain some few features of a successful e-commerce
- look into considerations before starting an e-commerce business
- find out what the customer wants from an e-commerce business
- explain some e-commerce pitfalls.

3.0 MAIN CONTENT

3.1 Key Ideas E-Commerce

3.1.1 Few Features of Successful E-Commerce

1. Reducing costs in business processes
2. Providing 360 degree customer service (through all channels equally)
3. Extending reach to new audiences or regions.
4. Retaining customers (locking them into profitable relationships)

5. Personalisation (providing each customer with individual attention/ service/products).
6. Controlling the supply chain (integration) often making it harder for competitors to compete.

3.1.2 Considerations before Starting an E-Commerce Business

1. Designing hosting/technology for scalability
2. Credit card fraud makes sophisticated secure payment systems important
3. Linking stock control systems to the web
4. Sales tax, vat and delivery charges can be hard to calculate and charge (different for different customers)
5. Enabling powerful self-service shopping with sufficient information and tools to enable the customer to find and select appropriate products or services
6. Inventory management
7. Managing the fulfillment processes/partners
8. Offering 24 hours global customer service
9. Store management is harder than simply adding/deleting products (re-Pricing, sales, specials, inventory)
10. Buying market share (marketing and promotion) is expensive but necessary to become a player in a market with significant existing retailers/ businesses.
11. Recovering from broken or poor quality site
12. Helping the customer to experience the products or services on offer.
13. Keeping on top of changing prices from your competitors (in multiple currencies)
14. Encouraging shoppers to come back
15. Handling returns and refunds
16. Handling complex pricing models (different prices for different customers)
17. Getting attention for your site and your products
18. Using customer data (CRM) effectively
19. Deciding on the right scale/level for a launch site
20. Improving the customer experience beyond the shopping cart
21. Reflecting seasons and coping with changes in demand
22. Making a profit

3.1.3 What to Desire as a Customer

1. To find what I want quickly
2. To experiment, “try things on”, research deeply, compare features
3. To be recognised as a customer
4. To feel that my personal information is secure

5. To feel that I am getting a good deal
6. To feel that the company behind the site understands my needs
7. To be able to listen to other shoppers who understand my needs
8. To be able to complain
9. To know that I can send things back if I don't like them, they don't work or they don't fit
10. To be able to talk to someone human if everything goes wrong.

3.2 Common E-Commerce Pitfalls

Despite the rapid growth in the use of e-commerce by both consumers and businesses, not all e-commerce developments are a success. The reasons for this vary and are often dependent upon a particular set of circumstances or issues. Nevertheless there is a common thread between many of the problems and pitfalls experienced by e-commerce systems.
This will give an overview of some of the more common e-commerce pitfalls. It obviously cannot cover all potential problem areas, but it will provide you with some useful pointers in terms of what not to do, and things to take account of, as you develop your own e-commerce offerings.

1. *Lack of planning*

Mistakes at the planning stage of an e-commerce project can reduce its chances of success. Here are some of the key issues you need to consider when introducing an e-commerce system.

2. *Set realistic targets*

Set clear goals - for example, to bring in new business or cut the cost of each sale. Agree specific, measurable objectives such as a percentage increase in sales or new customers. Ensure your targets are realistic and achievable. Have a clear business focus

3. Pursue possibilities offered by e-commerce, but don't lose your focus on what your business is actually about. Understand how e-commerce will integrate with your overall business objectives. Will it increase sales or improve margins? Have a clear view on where it will add value. If you find that e-commerce is creating conflicts within your operation, re-examine your goals and rethink how e-commerce can best fit into your business.

4. *Don't overlook the hidden costs*

Look at the total cost of ownership, including hardware, software, hosting, training, services, maintenance and support, upgrades, marketing and communications, and administration.

5. Understand the effect of increased sales - how are you going to process and dispatch orders? Will you have the capacity if sales take off or will you need to invest in additional resources or staff?

6. Understand your postage and shipping costs - identify where you will ship to and where you won't. Have a clear pricing policy for shipping - 'free postage' is great, but only to certain locations. Be realistic about likely costs from the start and ensure you keep your budget under control.

7. *Consider the site specification*
Draw up a site specification identifying what you are trying to achieve and how various components of the site contribute to this.

8. Build reliability and scalability into the solution from the start to ensure your site can grow in line with your business. Make your website simple to update so you can add content quickly and easily.

9. Don't view your e-commerce solution in isolation. Ensure you integrate it with your main corporate systems and overall it strategy.

10. *Design and usability concerns*
One of the key factors in the success of your e-commerce site will be how easy it is to use. Make sure you consider these important issues. Don't over-design the site; create a common theme of colours, fonts, graphics and page layouts. This can be achieved without the need for spectacular graphics. Keep the screen uncluttered - make good use of space. Only use effects that add value for the user.

11. *Consider download speeds*
Download times are key; users expect pages to load in less than five seconds. If your site is running slowly, consider upgrading it. Remove large images, graphics or animation from key pages if download speeds are slow.

12. *Support multiple browsers*
Design web pages that can be displayed by different browsers. The more common browsers include Microsoft Internet Explorer, Mozilla Firefox, Google chrome, Opera and Safari. Test your web pages with different browsers to ensure they display properly.

13. *Don't underestimate the importance of usability*
Ensure navigation buttons are clearly presented and the words or images behind these links are clear, concise and relevant to the information they are leading to. Include a site map and a search facility to help users locate the required information. Take account of the 'three-click rule' so

users starting at your home page can get to the required information in three mouse clicks.

14. *Get feedback on usability*

Many e-commerce operators don't get usability feedback from anyone beyond the development team. Consider getting an outside perspective - employees not involved in the design, a focus group, or your spouses or friends. This can be crucial to the site's development and performance. Ensure you get feedback before the full launch of the site. Once it is launched any problems will be highly visible to both your customers and competitors.

15. *Content problems*

First impressions are important. The quality of the content on your site can help create an immediate impression and also ensure that customers keep returning.

16. *Ensure information is accurate*

Your customers will be put off by out-of-date or incorrect information. Make sure information is accurate, especially prices, and monitor the information regularly. Make sure that all images display properly, are accurate and show products in their best light. Put your contact details, including phone numbers, email and postal addresses, or a prominent link to them, on the home page.

17. *Make the content easy to read*

Ensure text is easy to read - web users rarely read whole pages, so write more simply than you would in printed publications. Break text up with headings and bullet points. Remember also that English is a second language for many potential customers. Provide users with a clear description of the product. Ensure they have enough information to make an informed decision.

18. *Keep content fresh and interesting*

People expect websites to be updated constantly. If your website remains static, there is little incentive for users to revisit it and any opportunity to promote new products or services may be lost. Think about how you can engage with your customers using new technology. If you have a news section or announcements about new products then they should reflect the current situation. New content will also help your website perform well in search engine listings. Update the notice stating when the site was last updated, if you have one. Ask your web designer to incorporate a tool that will recognise newly added products and most popular products, and display them automatically on your homepage.

19. *Check the links on your site*

Regularly check internal links on your site. If they don't work, or a page has been removed, it reflects very poorly on your site. Users like links to other sites, so you should consider providing them. However, if there are too many links, or they appear too soon, you risk sending customers away from your website.

20. *Marketing considerations*

Marketing is all about promoting and selling your goods and services. You need to attract the attention of potential customers to convince them to purchase your products or services, and to turn first-time purchasers into repeat purchasers. No matter how good your site is, if people don't know about it they will not visit it. So, you need to consider various marketing strategies.

21. *Develop a marketing plan*

No matter what marketing medium you are using, if you want to attract new and existing customers to your site you must have a solid marketing plan. Give people a reason to return to your site, such as news, product launches or promotions.

22. Identify the target markets you plan to address and profile each market so you pitch your benefits at the correct level.

23. Ensure your marketing budget is realistic and is capable of funding all the activities you plan to undertake. Your marketing spend should be justified by the levels of sales you expect to generate.

24. Use the most appropriate marketing techniques

Select the most appropriate online and offline marketing techniques for your particular needs. Ensure your marketing campaign does not annoy or antagonise the customer - excessive spam following a purchase is a common complaint among e-commerce shoppers.

25. *Measure the effectiveness of your marketing efforts*

Measure your success, or otherwise, of your marketing initiative. This can help show what works and what doesn't.

26. Use tracking and site analysis tools to tell you more about your site visitors where they came from, what they did on your site (for example whether they purchased anything and what keywords they used), and where they went, when they left.

SELF-ASSESSMENT EXERCISE

Mention and explain the common e-commerce pitfalls you know.

4.0 CONCLUSION

To conclusively say that you have a successful e-commerce, there are some pointers or: features by which you can tell whether you are successful or not, some of which include: reducing costs in business processes, providing 360 degree customer service (through all channels equally), extending reach to new audiences or regions, retaining customers and so on. There are also some considerations before you can start an e-commerce business, how to read the customer's mind and know what he/she really wants. Finally, we attempted an overview of some common e-commerce pitfalls.

5.0 SUMMARY

In this unit, we discussed about some key ideas in e-commerce which include: features of successful e-commerce, considerations before starting an e-commerce business, what to want as a customer and finally common e-commerce pitfalls. Hoping that you understood the topics discussed, you may now attempt the questions below.

6.0 TUTOR-MARKED ASSIGNMENT

i. If you are a customer looking for a particular product to buy in an e-commerce site, briefly explain what you expect to see/get from the site.
ii. List and explain 5 basic considerations before starting an e-commerce business.
iii. There are so many e-commerce pitfalls, pick 4 and explain extensively.

7.0 REFERENCES/FURTHER READING

Cameron, D. (1997). *Electronic Commerce: The New Business Platform for the Internet*. Computer Technology Research.

Choi, S., Stahl, D.O & Whinstone, A.B. (1997). *The Economics of Electronic Commerce*. Indianapolis, IN: Macmillan.

Choi, *et al*. (1997). *The Economics of Electronic Commerce*. Macmillan Technical Publications, p. 18.

Coulouris, G., Dollimore J. & Kindberg, T. (2001). *Distributed Systems Concepts and Design*. Harlow: Addison-Wesley.

Cronin, M. J. (2000). *Unchained Value: The New Logic of Digital*

Business. U.S.A.: Harvard Business School Press.

Fournier, R. (1998). *A Methodology for Client Server and Web Application Development*. Yourdon Press.

Howcroft, D & Carroll, J. (2000). *A Proposed Methodology for Web Development.* Proceedings of the European Conference on Information Systems, Vienna, pp. 290-297.

Ince, D. (2003). *Developing Internet Applications.* Pearson Education Limited.

Kalakota, R. (1999) *E-Business*. Reading, MA: Addison-Wesley.

Kalakota, R. & Robinson M. (1999) *e-Business, Roadmap for Success*. Reading, MA: Addison-Wesley.

Kalakota, R. & Whinstone A.B. (1997). *Electronic Commerce*. Reading, MA: Addison-Wesley.

Kalakota, R. & Whinston A.B. (1997). *Electronic Commerce: A Manager's Guide*. Addison Wesley Longman, Inc.40

Kalakota, R. & Whinston,A.B.(1996).. *Frontiers of Electronic Commerce*. Addison-Wesley.

Kleindl, B. A. (2003). *Strategic Electronic Marketing: Managing e-business,* Thomson Learning, Mason, USA.

Korper, S. & Ellis J. (2000). *The E-Commerce Book: Building the E-Empire*. Morgan Kaufmann.

Kou, W. (2003). *Payment Technologies for E-Commerce*. Springer.

Lallana, E., Quimbo, R.S. & Zorayda R.B.A.(2000). *E-Primer: An Introduction to E-commerce*. DAI-AGILE, a USAID-Funded Project.

Lamont, D. (2001*). Conquering the Wireless World: The Age of M-commerce.* United Kingdom: Capstone Publishing Inc.

Mann, C., Eckert S. E. & Knight S.C. (2000). *Global Electronic Commerce: A Policy Primer.* Washington DC: Institute for International Economics.

May, P. (2000). *The Business of E-commerce*. Cambridge Press.

McFadyen, T.M. (2008). *e-commerce Best Practices.* McFadyen Solutions.

Plant, R. (2000). *e-commerce Formulation of Strategy.* U.S.A.: Prentice Hall Inc.

Rahman, S. (2000). *Electronic Commerce: Opportunities and Challenges.* IGI Global.

Reynolds, J. (2004). *The Complete E-Commerce book.* CMP.

Rich, J. (2008). *Design & Launch an e-commerce Business in a week.* Entrepreneur Press.

Rockwell, B. (1998). *Using The Internet To Compete in a Global Marketplace*. Wiley & Sons.

Rosen, A. (2000). T*he E-commerce Question and Answer Book: A Survival Guide for Business Managers.* American Management Association.

Schneider, G. (2010). *Electronic Commerce.* Course Technology.

Slawsky, J. H. & Zafar S. (2005). *Developing and Managing a Successful Payment Card*. Ashgate Publishing.

Smith, D. (2001). *The E-business Book: A Step-by-Step Guide to E-commerce and Beyond.* Princeton: Bloomberg Press.

Standing, C. (2000). *Internet Commerce Development.* Artech House Publishers, Boston.

Timmers, P. (2000). *Electronic Commerce-Strategies and Models for Business-to-Business Trading*. John Wiley & Sons,

Treese, G. W. & Stewart, L. C. (1998). *Designing Systems For Internet Commerce.* Addison-Wesley.

Trepper C.H. (2000). *E-Commerce Strategies*. Microsoft Press.

Turban, E., Lee, J., King D. & Chung, H.M. (1999). *Electronic Commerce: A Managerial Perspective.* Prentice Hall.

www.mhhe.com

www.commerce.net

www.whatis.com/e-commerce

www.straight-on.com/e-commerce

www.ecworld.utexas.edu

MODULE 2 UNDERSTANDING E- BUSINESS AND E-COMMERCE

UNIT 1 CONCEPTS OF E-BUSINESS AND E-COMMERCE

CONTENTS

1.0 INTRODUCTION

In the emerging global economy, e-commerce and e-business have increasingly become necessary components of business strategy and a strong catalyst for economic development. The integration of information and communications technology (ICT) in business has revolutionised relationships within organisations and those between and among organisations and individuals.

The name of the game is strategic positioning, the ability of a company to determine emerging opportunities and utilise the necessary human capital skills (such as intellectual resources) to make the most of these opportunities through an e-business strategy that is simple, workable and practicable within the context of a global information milieu and new economic environment. With its effect of leveling the playing field, e-commerce coupled with the appropriate strategy and policy approach enables small and medium scale enterprises to compete with large and capital-rich businesses.

2.0 OBJECTIVES

At the end of this unit, you should be able to:

- define and explain the concepts of e-business and e-commerce
- distinguish between e-business and e-commerce.

3.0 MAIN CONTENT

3.1 E-Business

As with e-commerce, *e-business* (electronic business) also has a number of different definitions and is used in a number of different contexts. One of the first to use the term was IBM in October 1997, when it launched a campaign built around e-business. Today, major corporations are rethinking their businesses in terms of the internet and its new culture and capabilities and this is what some see as e-business. E-business is the conduct of business on the internet, not only buying and selling but also servicing customers and collaborating with business partners. E-business includes customer service (e-service) and intra-business tasks. E-business is the transformation of key business processes through the use of Internet technologies. An e-business is a company that can adapt to constant and continual change. The development of *intranet* and *extranet* is part of e-business. E-business is everything to do with back-end systems in an organisation. In practice, e-commerce and e-business are often used interchangeably.

3.2 E-Commerce and E-Business

Internet terminology is still in a state of flux; nowhere is this more evident than in the use of the terms *e-commerce* and *e-business*. Both have been used to describe any business activity which uses the internet. However, some consensus is emerging in that the terms are gradually being employed in a more focused way. Some analysts and on-line business people have decided that e-business is infinitely superior to e-commerce. That's misleading and distracts us from the business goals at hand. The effort to separate the e-commerce and e-business concepts appears to have been driven by marketing motives and is dreadfully thin in substance. Here is the important thing: e-commerce, e-business or whatever else you may want to call it is a means to an end. In fact, there is no one definitive meaning of e-commerce or e-business that is universally established. The different terms are used to illustrate different perspectives and emphases of different people in different organisations and business sectors. Some argue that it makes little sense to have a restrictive definition for the term e-commerce since it is unlikely that there will be agreement on a single unique definition.

'Attempting to define e-commerce or e-business is guaranteed to generate Byzantine debates with meaningless origins.

Because of this trend, it is necessary when undertaking any electronic commerce, electronic business or any other e-related project or assignment to clearly define any term in the context and environment in which it is being used. The term e-commerce is increasingly being used to describe online retailing, for example the use of the web to sell books. The term e-business is increasingly being used to describe all business activities using the internet, not just online retailing.

3.3 An E-Distinction

For the purpose of clarity, the distinction between e-commerce and e-business is based on the respective terms *commerce* and *business*.

Commerce is defined as embracing the concept of trade, 'exchange of merchandise on a large scale between different countries'. By association, e-commerce can be seen to include the electronic medium for this exchange. Thus, electronic commerce can be broadly defined as the exchange of merchandise (whether tangible or intangible) on a large scale between different countries using an electronic medium – namely the internet. The implications of this are that e-commerce incorporates a whole socio-economic, telecommunications technology and commercial infrastructure at the macro-environmental level. All these elements interact together to provide the fundamentals of e-commerce. In e-commerce, information and communications technology (ICT) is used in inter-business or inter-organisational transactions (transactions between and among firms/organisations) and in business-to-consumer transactions (transactions between firms/organisations and individuals).

Business, on the other hand, is defined as 'a commercial enterprise as a going concern'. E-business can broadly be defined as the processes or areas involved in the running and operation of an organisation that are electronic or digital in nature. These include direct business activities such as marketing, sales and human resource management but also indirect activities such as business process re-engineering and change management, which impact on the improvement in efficiency and integration of business processes and activities. In e-business, on the other hand, ICT is used to enhance one's business. It includes any process that a business organisation (either a for-profit, governmental or non-profit entity) conducts over a computer-mediated network. A more comprehensive definition of e-business is "The transformation of an organisation's processes to deliver additional customer value through the application of technologies, philosophies and computing paradigm of the new economy."

Figure 1 illustrates the major differences in e-commerce and e-business. Where e-commerce has a broader definition referring more to the macro-environment; e-business relates more to the micro-level of the firm.

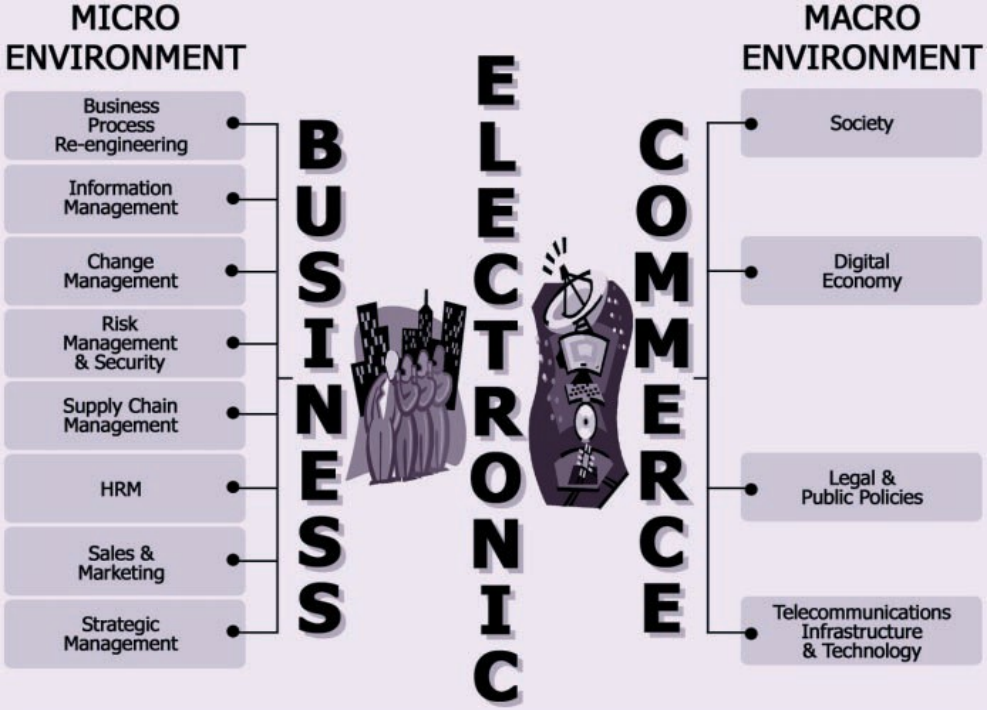


Fig. 1.1: Electronic Commerce and Electronic Business

4.0 CONCLUSION

There is no one definitive meaning of e-commerce or e-business that is universally established. The different terms are used to illustrate different perspectives and emphasises different people in different organisations and business sectors. Because of this, it is necessary when undertaking any electronic commerce, electronic business or any other e-related project or assignment to clearly define any term in the context and environment in which it is being used.

5.0 SUMMARY

In this unit, we agreed that there is no one commonly agreed definition of e-commerce or e-business. Thus, there is a need to clarify terms being used and explain the context in which they are being applied. You can now answer the questions below hoping that you understood the topics discussed in this unit.

6.0 TUTOR-MARKED ASSIGNMENT

i. Give in your own words a clear and concise definition of the following terms:
ii. e-commerce (b) e-business
iii. Explain 3 differences between e- commerce and e-business

7.0 REFERENCES/FURTHER READING

Bonnett, K. (2000). *An IBM Guide to Doing Business on the Internet.* U.S.A.:McGraw-Hill.

Cameron, D. (1997). *Electronic Commerce: The New Business Platform for the Internet*. Computer Technology Research.

Choi, S., Stahl, D.O & Whinstone, A.B. (1997). *The Economics of Electronic Commerce*. Indianapolis, IN: Macmillan.

Choi, *et al*. (1997). *The Economics of Electronic Commerce*. Macmillan Technical Publications, p. 18.

Coulouris, G., Dollimore J. & Kindberg, T. (2001). *Distributed Systems Concepts and Design*. Harlow: Addison-Wesley.

Cronin, M. J. (2000). *Unchained Value: The New Logic of Digital Business.* U.S.A.: Harvard Business School Press.

Fournier, R. (1998). *A Methodology for Client Server and Web Application Development*. Yourdon Press.

Howcroft, D & Carroll, J. (2000). *A Proposed Methodology for Web Development.* Proceedings of the European Conference on Information Systems, Vienna, pp. 290-297.

Ince, D. (2003). *Developing Internet Applications.* Pearson Education Limited.

Kalakota, R. (1999) *E-Business*. Reading, MA: Addison-Wesley.

Kalakota, R. & Robinson M. (1999) *e-Business, Roadmap for Success*. Reading, MA: Addison-Wesley.

Kalakota, R. & Whinstone A.B. (1997). *Electronic Commerce*. Reading, MA: Addison-Wesley.

Kalakota, R. & Whinston A.B. (1997). *Electronic Commerce: A Manager's Guide*. Addison Wesley Longman, Inc.40

Kalakota, R. & Whinston,A.B.(1996)..*Frontiers of Electronic Commerce*. Addison-Wesley.

Kleindl, B. A. (2003). *Strategic Electronic Marketing: Managing e-business*, Thomson Learning, Mason, USA.

Korper, S. & Ellis J. (2000). *The E-Commerce Book: Building the E-Empire*. Morgan Kaufmann.

Kou, W. (2003). *Payment Technologies for E-Commerce*. Springer.

Lallana, E., Quimbo, R.S. & Zorayda R.B.A.(2000). *E-Primer: An Introduction to E-commerce*. DAI-AGILE, a USAID-Funded Project.

Lamont, D. (2001*). Conquering the Wireless World: The Age of M-commerce.* United Kingdom: Capstone Publishing Inc.

Mann, C., Eckert S. E. & Knight S.C. (2000). *Global Electronic Commerce: A Policy Primer.* Washington DC: Institute for International Economics.

May, P. (2000). *The Business of E-commerce*. Cambridge Press.

McFadyen, T.M. (2008). *e-commerce Best Practices*. McFadyen Solutions.

Plant, R. (2000). *e-commerce Formulation of Strategy.* U.S.A.: Prentice Hall Inc.

Rahman, S. (2000). *Electronic Commerce: Opportunities and Challenges.* IGI Global.

Reynolds, J. (2004). *The Complete E-Commerce book.* CMP.

Rich, J. (2008). *Design & Launch an e-commerce Business in a week.* Entrepreneur Press.

Rockwell, B. (1998). *Using The Internet To Compete in a Global Marketplace*. Wiley & Sons.

Rosen, A. (2000). T*he E-commerce Question and Answer Book: A Survival Guide for Business Managers.* American Management Association.

Schneider, G. (2010). *Electronic Commerce.* Course Technology.

Slawsky, J. H. & Zafar S. (2005). *Developing and Managing a Successful Payment Card*. Ashgate Publishing.

Smith, D. (2001). *The E-business Book: A Step-by-Step Guide to E-commerce and Beyond.* Princeton: Bloomberg Press.

Standing, C. (2000). *Internet Commerce Development.* Artech House Publishers, Boston.

Timmers, P. (2000). *Electronic Commerce-Strategies and Models for Business-to-Business Trading*. John Wiley & Sons,

Treese, G. W. & Stewart, L. C. (1998). *Designing Systems For Internet Commerce.* Addison-Wesley.

Trepper C.H. (2000). *E-Commerce Strategies*. Microsoft Press.

Turban, E., Lee, J., King D. & Chung, H.M. (1999). *Electronic Commerce: A Managerial Perspective.* Prentice Hall.
www.mhhe.com
www.commerce.net
www.whatis.com/e-commerce
www.straight-on.com/e-commerce
www.ecworld.utexas.edu

UNIT 2 FACILITIES THAT SUPPORT E-COMMERCE AND E-BUSINESS SYSTEMS

CONTENTS

1.0 INTRODUCTION

In this unit, we shall discuss the various facilities that support e-commerce and e-business systems.

2.0 OBJECTIVES

At the end of this unit, you should be able to:

- mention the various facilities that support e-commerce and e-business systems
- discuss extensively the facilities that support these systems.

3.0 MAIN CONTENT

3.1 The Facilities that Support E-Commerce and E-Business Systems

1. The World Wide Web

The web is nothing more than a collection of files stored at locations throughout the world. These files are written using a special language known as the Hypertext Markup Language (HTML). A file written using this language will contain text which forms the information content of the file, together with instructions which define how the text is to be displayed; for example, HTML contains a facility whereby blocks of text are specified to be displayed as bullet points.

The user of the World Wide Web employs a program known as a browser. When the user wishes to read a file on the World Wide Web he will inform the browser of its address on the web and the browser will

fetch the file. The browser will then examine the contents of the page and will determine from the HTML in the file how it is to be displayed; for example, it might meet some HTML which switches the display of the material from one font to another font.

A file which is downloaded into a browser is known as a web page. The computer that holds web pages is known as a web server. The collection of pages which are linked by some theme – for example, they may be pages which all belong to the same retail company – is known as a website.

Each page that is downloaded into a browser will have references to other pages expressed as hyperlinks. For example, a page belonging to a book retailer will have hyperlinks to the various sections of the site which deal with different types of books. Hyperlinks can refer to pages within the same site or can refer to pages within another site; for example, an online magazine might refer to other online magazines which are part of the same publisher's stable. Figure 1.2 shows a typical display from a browser. It represents a page from a site run by a British consumer organisation. There are hyperlinks embedded in the site in the main parts of the text (these are underlined) and hyperlinks in the left-hand side of the page in the shaded square.

The description above of the World Wide Web is a bare bones one which was true about eight years ago: web pages can now contain a wide variety of media including audio files, video files, graphics and even programs which can execute while the browser is being viewed. Without the World Wide Web, e-commerce would be barely possible: it provides a standard interface to a variety of documents, products, services and software.

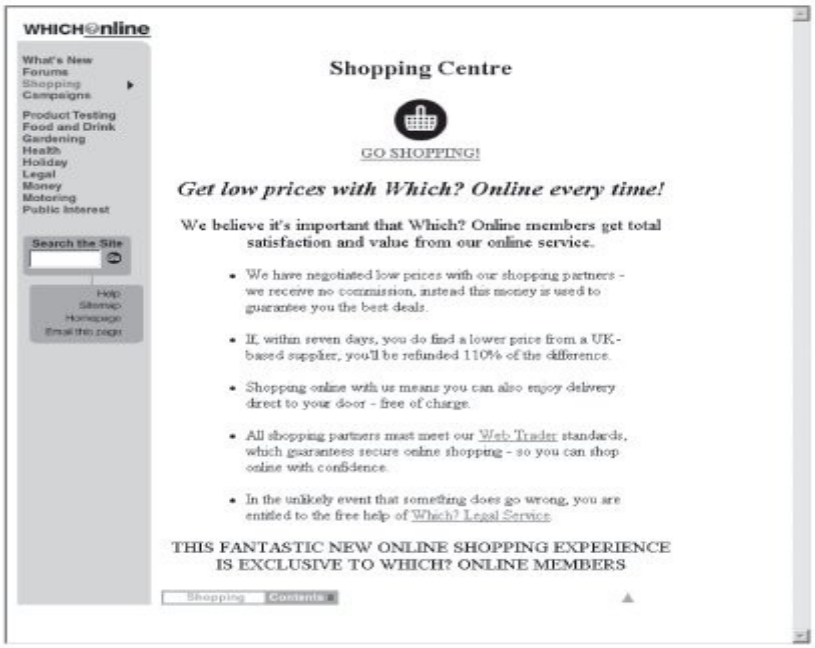


Fig. 1.2: A Typical Web Page

2. FTP

The acronym FTP stands for the File Transfer Protocol. It provides the facility whereby files can be downloaded into a computer from another computer in the internet. Although there are a number of utilities for file transfer most users now employ browsers for this via FTP links.

There are a number of utilities which enable you to load anything from clip art to the latest updates for operating systems. Many of these utilities are very primitive: they use a simple command line interface which lets you log in to the computer which holds the files, and then enables you to use simple textual commands to identify the files to be downloaded. However, there are now a large number of sophisticated FTP programs which, for example, allow you graphically to show the structure of the file system on the remote computer, use drag and drop to download files and resume processing when transfer is interrupted by a network hang-up. Web documents can also contain FTP links which also enable the downloading of files. FTP is the mainstay of commercial companies who sell electronic products; it is a simple facility which has been found on the internet since its inception in the 1980s.

3. E-mail

This is one of the most ubiquitous technologies on the internet and, along with the World Wide Web, is the most used. When you write an email you use a program known as a mailer. When the email is completed it is sent via a number of computers known as email servers and via a number of other intermediate computers before it reaches its destination where it is read. In e-commerce applications, email is a subsidiary, but important technology. It is used as the transport medium

for mailing lists, for enabling customers to communicate with a company, for sending documents and data to customers and for keeping customers up to date about current products and services. Mailers are sometimes known as mail user agents while mail servers are sometimes known as mail transfer agents.

4. Newsgroups

A newsgroup is a collection of internet users who are interested in a particular topic. The topic may be a technical one, for example the LINUX operating system, or a recreational one such as fly fishing. Members of a newsgroup send messages associated with a particular issue such as the date of release of the next version of LINUX or the efficacy of using certain files on certain rivers. Each message – known as a posting – will contain the user's thoughts on the topic. Once posted these thoughts are responded to by other users. For example, one user may say that they have got solid information that the next version of LINUX will be released next week. The collection of responses to a posting and the original posting is known as a thread.

Newsgroups can be moderated or unmoderated. If a newsgroup is moderated a member will examine each posting and determine whether it should be posted. There are a number of reasons why postings are rejected: one major reason is that it is not relevant to the area that a newsgroup covers; another reason is that the posting is abusive to another user. There are no restrictions on posting to unmoderated newsgroups.

Newsgroups are accessed by using a special purpose software utility known as a newsreader; although there is an excellent search site known as *Deja.com* which allows access to newsgroups.

Newsgroups are normally employed by ordinary users of the internet and have not really been associated with e-commerce. However, a number of companies are beginning to wake up to their potential. For example, a number of software companies assign staff to read the postings in newsgroups which are devoted to one of their products in order to field any questions which might arise about them: it provides a good impression to future and present customers if a company will provide help about a product without, for example, users having to ring a high-tariff phone line. Other companies are also beginning to embed newsgroup technology into their web pages in order to create customer feedback groups which enable them to decide on future upgrades and new products.

5. Mailing lists

Mailing lists are groups of users who have some interest in common, for example they may all be network professionals. Such a list is used by organisations or individuals to inform the members of topics of interest to them. For example, my local cinema has a mailing list of cinema goers who have bought season tickets. It emails everyone on the list with the titles of those films which are to be shown in the coming week and notifies them of any special ticket offers. While there are many uses for mailing lists *within* companies there are also plenty of uses in e-commerce. For example, a mailing list can be used to inform current customers of any new products or services that are being offered. Most mailing lists are automatically maintained by specialized software. Such software allows someone to subscribe to a mailing list or drop out of a mailing list by just sending a simple email message to the software. For example, often all that is needed to subscribe to a mailing list is a single line email containing the message. This will result in the user who sent the email being added to the list of users associated with the mailing list.

6. Kelly's Rules

This is about the technical processes that are involved in the development of e-commerce and e-business systems. However, it is worth saying in passing that e-commerce and e-business applications seem to be radically changing the face of business. Probably, the best chronicler of these changes is Kevin Kelly, one of the founders of *Wired* magazine. His most influential work is *New Rules for the New Economy* published by Fourth Estate. In this book, he shows how e-commerce and e-business have overturned many of the conventional laws and rules about business. For example, he shows how companies can make huge profits by giving away free products, such as operating systems and browsers, with the profit being made from hardware, support software and services.

4.0 CONCLUSION

We have looked at the various facilities that support e-commerce and e-business systems.

5.0 SUMMARY

In this unit, we talked about the facilities that support e-commerce and e-business systems. Having understood the topic discussed, you may now attempt the questions below.

6.0 TUTOR-MARKED ASSIGNMENT

Describe four other facilities not mentioned in this unit that support e-commerce and e-business systems.

7.0 REFERENCES/FURTHER READING

Bonnett, K. (2000). *An IBM Guide to Doing Business on the Internet.* U.S.A.:McGraw-Hill.

Cameron, D. (1997). *Electronic Commerce: The New Business Platform for the Internet*. Computer Technology Research.

Choi, S., Stahl, D.O & Whinstone, A.B. (1997). *The Economics of Electronic Commerce*. Indianapolis, IN: Macmillan.

Choi, *et al*. (1997). *The Economics of Electronic Commerce*. Macmillan Technical Publications, p. 18.

Coulouris, G., Dollimore J. & Kindberg, T. (2001). *Distributed Systems Concepts and Design*. Harlow: Addison-Wesley.

Cronin, M. J. (2000). *Unchained Value: The New Logic of Digital Business.* U.S.A.: Harvard Business School Press.

Fournier, R. (1998). *A Methodology for Client Server and Web Application Development*. Yourdon Press.

Howcroft, D & Carroll, J. (2000). *A Proposed Methodology for Web Development.* Proceedings of the European Conference on Information Systems, Vienna, pp. 290-297.

Ince, D. (2003). *Developing Internet Applications.* Pearson Education Limited.

Kalakota, R. (1999) *E-Business*. Reading, MA: Addison-Wesley.

Kalakota, R. & Robinson M. (1999) *e-Business, Roadmap for Success*. Reading, MA: Addison-Wesley.

Kalakota, R. & Whinstone A.B. (1997). *Electronic Commerce*. Reading, MA: Addison-Wesley.

Kalakota, R. & Whinston A.B. (1997). *Electronic Commerce: A Manager's Guide*. Addison Wesley Longman, Inc.40

Kalakota, R. & Whinston,A.B.(1996)..*Frontiers of Electronic Commerce*. Addison-Wesley.

Kleindl, B. A. (2003). *Strategic Electronic Marketing: Managing e-business,* Thomson Learning, Mason, USA.

Korper, S. & Ellis J. (2000). *The E-Commerce Book: Building the E-Empire*. Morgan Kaufmann.

Kou, W. (2003). *Payment Technologies for E-Commerce*. Springer.

Lallana, E., Quimbo, R.S. & Zorayda R.B.A.(2000). *E-Primer: An Introduction to E-commerce*. DAI-AGILE, a USAID-Funded Project.

Lamont, D. (2001*). Conquering the Wireless World: The Age of M-commerce.* United Kingdom: Capstone Publishing Inc.

Mann, C., Eckert S. E. & Knight S.C. (2000). *Global Electronic Commerce: A Policy Primer.* Washington DC: Institute for International Economics.

May, P. (2000). *The Business of E-commerce*. Cambridge Press.

McFadyen, T.M. (2008). *e-commerce Best Practices*. McFadyen Solutions.

Plant, R. (2000). *e-commerce Formulation of Strategy.* U.S.A.: Prentice Hall Inc.

Rahman, S. (2000). *Electronic Commerce: Opportunities and Challenges.* IGI Global.

Reynolds, J. (2004). *The Complete E-Commerce book.* CMP.

Rich, J. (2008). *Design & Launch an e-commerce Business in a week.* Entrepreneur Press.

Rockwell, B. (1998). *Using The Internet To Compete in a Global Marketplace*. Wiley & Sons.

Rosen, A. (2000). T*he E-commerce Question and Answer Book: A Survival Guide for Business Managers.* American Management Association.

Schneider, G. (2010). *Electronic Commerce.* Course Technology.

Slawsky, J. H. & Zafar S. (2005). *Developing and Managing a Successful Payment Card*. Ashgate Publishing.

Smith, D. (2001). *The E-business Book: A Step-by-Step Guide to E-commerce and Beyond.* Princeton: Bloomberg Press.

Standing, C. (2000). *Internet Commerce Development.* Artech House Publishers, Boston.

Timmers, P. (2000). *Electronic Commerce-Strategies and Models for Business-to-Business Trading*. John Wiley & Sons,

Treese, G. W. & Stewart, L. C. (1998). *Designing Systems For Internet Commerce.* Addison-Wesley.

Trepper C.H. (2000). *E-Commerce Strategies*. Microsoft Press.

Turban, E., Lee, J., King D. & Chung, H.M. (1999). *Electronic Commerce: A Managerial Perspective*. Prentice Hall.

www.mhhe.com
www.commerce.net
www.whatis.com/e-commerce
www.straight-on.com/e-commerce
www.ecworld.utexas.edu

UNIT 3 ISSUES AND PROBLEMS THAT AFFECT E-COMMERCE AND E-BUSINESS DEVELOPMENT

CONTENTS

1.0 INTRODUCTION

In this unit, we shall discuss the issues and problems affecting e-commerce and e-business development.

2.0 OBJECTIVES

At the end of this unit, you should be able to:

- list the issues and problems affecting e-commerce and e- business development
- explain these issues and problems

3.0 MAIN CONTENT

3.1 Issues and Problems Affecting E-Commerce and E-Business Development

1. Legacy Technology

The World Wide Web was developed as a way of dispensing documentation within the large research laboratory at CERN in Geneva. I am sure that the originator of the technology, Tim Berners-Lee, did not realise at that stage how it would expand and become a major component of our economic infrastructure. Because many of the developers of the technology were unaware of its potential, there are a number of problems associated with its huge expansion. Three of these are discussed in the following subsections.

2 Space Problems

Probably the best known of these is the fact that the internet is running out of space for identifying computers. Each computer in a network needs to be identified by a unique data pattern known as an IP address. The current technology used to transport data around the internet is such that in the comparatively near future we shall run out of space to hold these unique addresses. Happily, this is a problem that has been identified and groups of researchers around the globe have developed new technologies which will eventually overcome this problem, one of these technologies being a new version of the protocol used to transfer data over the internet.

3 Stateless Servers

Web servers are what are known as stateless servers. What this means is that in their pure form, they keep no memory of what has previously happened to them between requests; for example, when a request is processed by a web server for a page they have no direct knowledge about whether the page request was made by the same browser that asked for a previous page to be returned. While this was not serious when web servers were being mainly used for dispensing documentation (their original use) it is a serious problem in e-commerce. One example of this is the shopping cart, also known as the shopping trolley. When you visit an e-tailer and purchase goods, you interact with a simulation of a shopping cart which keeps details of the goods that you have purchased. At the end of your interaction a web page, often known as a checkout page, will display the contents of the shopping cart and present you with the monetary total of your purchases. Web servers as originally envisaged are unable to do this as they have no knowledge of any previous visit: they would not be able to remember the previous purchase.

(Web servers will keep details of the accesses to their stored pages in a simple sequential file known as a log file which is used for marketing purposes and for optimising the web server.)

In the comparatively early days of the web, this was seen to be a problem and a form of programming known as Common Gateway Interface programming was developed which enabled a web server to have a memory. There are a number of other, more recent technologies which have been developed to cope with this problem. The first is cookies; these are chunks of data which are stored on the computer running the web browser and which can be accessed by the browser throughout their interaction with a particular website. Such cookies can, for example, store the data associated with a shopping cart. Another technology used to store state is servlets; this is a technology, which employs cookies, and which is associated with Java. It enables the

programmer to develop reusable code that can be plugged into a server and which keeps data persistently in the web server.

4. No Dynamic Web Pages

Another example of a problem with web servers which arises from their original functionality is the fact that web pages were designed to be static: they were files which were stored on a computer and delivered in their stored form to anyone using a browser to access them. Many e-commerce and e-business applications require something much more dynamic, for example there are a number of financial service sites on the web which provide customers with up-to-date stock and share prices. These prices are stored on web pages and need to change very frequently – often every few seconds. There have been a number of add-on technologies that have been developed in order to cope with this problem.

One early solution is something known as a Server Side Include in which parts of a web page are marked as being dynamic and, prior to their being sent to the browser, they are updated with data that has changed. Servlets are also used to produce dynamic pages, for example they can be programmed to return specific web pages to a browser containing content loaded in from a database. Another technology which has become very prominent over the last years is known generically as dynamic pages. This is a more flexible version of Server Side Includes which allows the Java programmer to insert data into a web page at specified points on a real-time basis. There is also a Microsoft implementation of dynamic pages known as active server pages. There are a number of other technologies such as *mod_perl* and *php*.

5. Security and Privacy

The internet is not a particularly secure place. There are two aspects to this: the first is that information is widely published throughout the internet which can be used for criminal and near-criminal activities. The second aspect is that since the internet is an open system, details of its underlying technologies are freely available to anybody. This means that the way data passes through the internet is in the public domain; the consequence of this is that, theoretically, anyone with the right tools can eavesdrop on data passing from one computer on the internet to another.

Internet application developers face security problems. This is not the only problem that faces internet users. The internet, and in particular the world wide web, has provided such a fast and anonymous means of communication that old forms of criminal activity have had a second breath of life. Share ramping is the process whereby rumours are started about a company which would result in its shares either rising or falling, for example a rumour about it being taken over. The criminals who

started the rumour will then either buy the shares if they have fallen and make a profit when they rise or sell shares they had bought previously when the price rises. The internet makes communication so fast and anonymous that share ramping has become a major financial phenomenon during these last years. Share ramping was once known as painting the tape; it is derived from the ticker tape machines which were used to communicate share prices to dealers before the 1960s. A less serious form of ramping has occurred on online book retailing sites which publish readers' reviews of books, where authors and the staff at publishers submit reviews under an assumed name and which greatly praise a book. This is known as book ramping.

It is worth examining the first problem. Already you have met one of the consequences of data being readily published on the internet: the fact that spammers can use programs known as address harvesters to send large quantities of unsolicited email to users. There are much more serious manifestations of this problem, for example a phenomenon that has occurred is cyber stalking. This is where a user of the internet finds the details of another user's email account and harasses them electronically, sending them emails, contacting them via newsgroups and intruding into the chat rooms that they use.

The possession of an email address can even provide the means whereby someone can bring down part of a networked system. It is relatively easy to program a computer to send many thousands of emails to a computer which is handling email communication for a company or organisation; the volume of emails can be so high that the computer is unable to carry out its main function: that of enabling staff of the company or organisation to send and receive emails. This is a form of attack known as a denial of service attack or degradation of service attack.

List linking is a recent form of harassment where someone discovers your email address (es) and subscribes you to a large number of mailing lists. Often these lists generate as many as a hundred emails a day and some also send emails with large file attachments associated with them. A malicious user who wishes to disable another user's email processing can easily do this by subscribing them to hundreds of mailing lists; this is a process that is quite easy to automate. An attacker who wants to disable the communications of a large company can, if they have access to the internal email directory of the company, disable its email system completely.

The second aspect of security is that data flow across the World Wide Web and the protocols used to communicate with computers in the internet are public. This means that anyone who wishes to enter a computer system which has a connection to the internet or anyone who

wishes to read the data passing through it has a major advantage. There is, however, a contrary point of view which states that by keeping security details open any security breaches can be plugged easily by patches generated from a knowledgeable community of developers.

There are major gains for the criminal in being able to access a 'secure' system. For example, a criminal who can read the details of a credit card passing along a transmission line from a browser to a web server, can use that data to order goods over the net and remain undetected until the next time the credit card statement is delivered to the card holder; in this respect they have a major advantage over the criminal who just steals the card. A criminal who wishes to sabotage a network – perhaps a disgruntled former employee of the company – can send a program over the internet which is then executed on the internal network of the company and deletes key files. A commercial spy can monitor the data being sent down a communication line and discover that it is from a company to a well-known research and development organisation which specialises in certain niche products. This information, even just the name of the R&D company, is valuable to any competitor.

When the internet and the World Wide Web were developed, security was not high on the agenda. There were two reasons for this: the first is that the developers of the embryonic internet were tussling with what was then novel technology and most of their focus was on basic aims such as establishing and maintaining reliable communications; the second reason is that very few people realised then that the internet was going to be used for commercial purposes.

Happily, there has been a huge increase in technologies used to secure the internet. For example, a technology known as Secure Sockets Layer uses cryptography to encode the data passing between a web browser and a web server so that anyone eavesdropping is unable to read it.

6. Programming and Abstraction

In the early 1990s, programming an application for the internet was a tough proposition.

Java, when it appeared in 1996, enabled developers to treat another computer on a network essentially as if it was an input or output device; the programming code required to send data or receive data from another computer differed only slightly from that required to send and receive data from files.

However, even the programming facilities provided in the initial releases of the Java system are in opposition to a principle that both the

developer and the user of a networked system should be unaware of the fact that they are accessing a networked system. This principle has been enshrined in a sales statement from Sun Systems, the original developer of the Java language, that the 'network is the computer'. What this means is that the developer should be designing and programming in such a way that much of the detail of the internet is hidden away under a number of levels of abstraction.

This is best exemplified by the idea of distributed objects. Distributed objects are objects which are stored on computers in a network, and to which messages can be sent as if they were objects residing on the computer which is sending the messages. In this way a programmer develops software for a distributed system in the same way that they would for a single computer: by defining classes and by executing code containing objects defined by the classes, with the code sending messages to the objects; the actual details of how the transport of messages occurs would be hidden from the programmer. Two distributed object technologies: RMI, which is a pure Java technology, and CORBA, which enables distributed objects programmed in different languages to interact with each other.

The theme of greater levels of abstraction does not stop there, however. A form of distributed programming known as tuple space development is as far from the physical details of the internet as you could possibly get. Here, the underlying model is that of a large shared data space to which computers on a network can read and write data.

7. The Speed of Development

E-commerce consultants speak of a web year. This is the time which it takes to bring to implementation a conventional system that would normally take a calendar year to develop. Current estimates are that one calendar year is equivalent to seven web years. Nowhere is there more of an imperative for companies to develop products and services quickly, together with the computing infrastructure required to support them, than in e-commerce. In software engineering terms, this has given rise to a number of software development methods which are loosely described by the term rapid application development. In technology terms, it has given rise to a number of ideas which go some way along the path which ends with providing facilities that enable companies to develop systems by just bolting components together, with many of the components being specified using design templates.

8 Structure and Data

A problem that is being increasingly experienced by internet companies is the fact that they have to interchange a large amount of data and that such data inherently lacks structure. For example, HTML has proved to

be an enduring markup language for developing web pages; however, there are no facilities within the language, for example, to indicate whether an item of data, say a three-digit number, represents the price of a commodity or some hourly rate charged by a company employee.

There are also problems with browsers. There are two main browsers employed by users of the World Wide Web. Each of these browsers can display the browser pages they process in different ways, especially if they contain advanced facilities of HTML. There is also a further problem with browsers which is even more serious than the one detailed in the previous paragraph. Networking technologies are now being used in conjunction with other technologies such as those associated with mobile phone technology and television. This has led to the emergence of a number of different markup languages which are focused on particular devices, for example there is a markup language known as WML (Wireless Markup Language) which is used to display documents on internet mobile phones. The diversity of such languages means that the overhead in maintaining a number of versions of a document for different media can be very large.

Happily, a technology has been developed known as XML which can be used to indicate structure in a document. There are also a number of tools available which allow the developer to maintain a single version of a document expressed in a language defined by XML and easily convert it into a form that can be displayed on a variety of media including television sets, internet phones and a variety of World Wide Web browsers.

9. Problems with Transactions

A distributed transaction is a sequence of operations applied to a number of distributed databases which form a single functional step. For example, a transaction which moves an amount of money from a customer's account to an account owned by the same customer is an example of a transaction. It consists of two operations: the operation of debiting one account and the operation of crediting another account. There are a number of problems associated with distributed transactions. We will briefly concentrate on one. This is the problem of deadlock: the fact that a transaction applied at one server might be waiting for data which is currently contained on another server, with the other server awaiting some resource that is held on the first server. For example, the first server might contain the account data that the second server needs to complete a transaction, while the second server might require other account data for it to proceed. *Enterprise JavaBeans* removes from the programmer the need to worry about many of the problems detailed above. *Enterprise JavaBeans* is a distributed component technology

which allows developers to develop reusable components which can be used in transactions.

10. Design

Designing a distributed system can also be a problem, for example the fact that computers in a distributed system are joined by communication media which can stretch over thousands of miles provides an added dimension to the design process in that response time can be a problem. Another, equally serious problem is that of reliability, for example the fact that a hardware malfunction can bring down a poorly-designed distributed system.

As an example of one design problem that a distributed systems developer has to face consider that of replicated data. Replicating data is such a common technique that there are a large number of products available that allow you to implement it without very much programming. A replicated database is a database which exists in the same form at a number of points in a distributed system. There are two reasons for having replicated databases: the first is reliability. When a system contains a number of replicated databases and one of them becomes unavailable – perhaps because of a hardware fault – another database can take over its role. The second reason is to improve response time. A designer of a distributed system will try and place a database close to its users, usually connected via a fast local area network. Often the original database that is used is a long distance away and can only be accessed via slow internet connections; hence replicating the database and placing it close to the users usually results in a large reduction in response time.

However, using replication comes at a cost: each replicated database needs to keep up-to-date data and will need to coordinate with other databases in order to do this; this gives rise to synchronisation traffic over the network which supports the databases, and can result in a very slow response time. Designing for data replication, where the amount of replication and the location of the replicated data is such that response time is lowered, and yet traffic is not increased to the point where all the gains are nullified, is an art.

4.0 CONCLUSION

Issues and problems affecting e-commerce and e-business development include:

1. Legacy technology
2. Security and privacy
3. Programming and abstraction
4. The speed of development e.t.c.

5.0 SUMMARY

In this unit, we explained about the issues and problems that affect e-commerce and e-business development. You can now answer the question below hoping that you understood the topics discussed in this unit.

6.0 TUTOR-MARKED ASSIGNMENT

Mention other issues and problems affecting e-commerce and e-business development.

7.0 REFERENCES/FURTHER READING

Bonnett, K. (2000). *An IBM Guide to Doing Business on the Internet.* U.S.A.:McGraw-Hill.

Cameron, D. (1997). *Electronic Commerce: The New Business Platform for the Internet*. Computer Technology Research.

Choi, S., Stahl, D.O & Whinstone, A.B. (1997). *The Economics of Electronic Commerce*. Indianapolis, IN: Macmillan.

Choi, *et al*. (1997). *The Economics of Electronic Commerce*. Macmillan Technical Publications, p. 18.

Coulouris, G., Dollimore J. & Kindberg, T. (2001). *Distributed Systems Concepts and Design*. Harlow: Addison-Wesley.

Cronin, M. J. (2000). *Unchained Value: The New Logic of Digital Business.* U.S.A.: Harvard Business School Press.

Fournier, R. (1998). *A Methodology for Client Server and Web Application Development*. Yourdon Press.

Howcroft, D & Carroll, J. (2000). *A Proposed Methodology for Web Development.* Proceedings of the European Conference on Information Systems, Vienna, pp. 290-297.

Ince, D. (2003). *Developing Internet Applications.* Pearson Education Limited.

Kalakota, R. (1999) *E-Business*. Reading, MA: Addison-Wesley.

Kalakota, R. & Robinson M. (1999) *e-Business, Roadmap for Success*. Reading, MA: Addison-Wesley.

Kalakota, R. & Whinstone A.B. (1997). *Electronic Commerce*. Reading, MA: Addison-Wesley.

Kalakota, R. & Whinston A.B. (1997). *Electronic Commerce: A Manager's Guide*. Addison Wesley Longman, Inc.40

Kalakota, R. & Whinston,A.B.(1996)..*Frontiers of Electronic Commerce*. Addison-Wesley.

Kleindl, B. A. (2003). *Strategic Electronic Marketing: Managing e-business,* Thomson Learning, Mason, USA.

Korper, S. & Ellis J. (2000). *The E-Commerce Book: Building the E-Empire*. Morgan Kaufmann.

Kou, W. (2003). *Payment Technologies for E-Commerce*. Springer.

Lallana, E., Quimbo, R.S. & Zorayda R.B.A.(2000). *E-Primer: An Introduction to E-commerce*. DAI-AGILE, a USAID-Funded Project.

Lamont, D. (2001*). Conquering the Wireless World: The Age of M-commerce.* United Kingdom: Capstone Publishing Inc.

Mann, C., Eckert S. E. & Knight S.C. (2000). *Global Electronic Commerce: A Policy Primer*. Washington DC: Institute for International Economics.

May, P. (2000). *The Business of E-commerce*. Cambridge Press.

McFadyen, T.M. (2008). *e-commerce Best Practices*. McFadyen Solutions.

Plant, R. (2000). *e-commerce Formulation of Strategy.* U.S.A.: Prentice Hall Inc.

Rahman, S. (2000). *Electronic Commerce: Opportunities and Challenges.* IGI Global.

Reynolds, J. (2004). *The Complete E-Commerce book*. CMP.

Rich, J. (2008). *Design & Launch an e-commerce Business in a week.* Entrepreneur Press.

Rockwell, B. (1998). *Using The Internet To Compete in a Global Marketplace*. Wiley & Sons.

Rosen, A. (2000). T*he E-commerce Question and Answer Book: A Survival Guide for Business Managers.* American Management Association.

Schneider, G. (2010). *Electronic Commerce.* Course Technology.

Slawsky, J. H. & Zafar S. (2005). *Developing and Managing a Successful Payment Card*. Ashgate Publishing.

Smith, D. (2001). *The E-business Book: A Step-by-Step Guide to E-commerce and Beyond.* Princeton: Bloomberg Press.

Standing, C. (2000). *Internet Commerce Development.* Artech House Publishers, Boston.

Timmers, P. (2000). *Electronic Commerce-Strategies and Models for Business-to-Business Trading*. John Wiley & Sons.

Treese, G. W. & Stewart, L. C. (1998). *Designing Systems For Internet Commerce.* Addison-Wesley.

Trepper C.H. (2000). *E-Commerce Strategies*. Microsoft Press.

Turban, E., Lee, J., King D. & Chung, H.M. (1999). *Electronic Commerce: A Managerial Perspective.* Prentice Hall.

www.mhhe.com

www.commerce.net

www.whatis.com/e-commerce

www.straight-on.com/e-commerce

www.ecworld.utexas.edu

MODULE 3 WEBSITE DEVELOPMENT FOR E-COMMERCE

UNIT 1 INTRODUCTION AND TECHNIQUES FOR WEB DESIGN

CONTENTS

1.0 INTRODUCTION

In order to have a successful e-commerce, the design of the site is a very important factor because it is what the prospective customer will identify you with. In this unit, we will discuss about e-commerce web design and its techniques.

2.0 OBJECTIVES

At the end of this unit, you should be able to:

- describe the e-commerce web design
- explain the techniques for web design and finally
- discuss its design methods and features
- mention the benefits of e-commerce web design

3.0 MAIN CONTENT

3.1 E-Commerce Web Design

E-commerce web design is generally defined as the planning, creation and arrangement of files, text, graphics and processes used within an e-commerce enabled website. The files make up different sections of the site which typically include pages, categories, subcategories and products. E-commerce web design is commonly referred to as web design, web development, site design, site development, shop design/development, store design/development, or web store design/development.

3.1.1 Beginning and Future of E-Commerce Web Design

E-commerce designs have evolved over the years from plain looking designs with few graphics and little appeal to fully interactive e-commerce sites using the latest in graphic design and programming technologies. The days of simple layouts and designs are pretty much done with as competition increases and more merchants are attempting to improve the look, feel and usability of their e-commerce designs. Now it is more common to see gradient graphics, more options for shoppers, features surrounding customers, better layouts, faster load times, videos, more payment options and much more. New age e-commerce design is about being creative and original, pretty much anything that can be thought of can be accomplished using current e-commerce design technology for an e-commerce business.

3.1.2 E-Commerce Design Methods and Features

E-commerce design today typically consists of several unique features or elements and can be performed using a variety of popular web design methods. A database, shopping cart, ability to accept payments, security certificate, products, policies and more are all common e-commerce design features. There are also e-commerce design and shopping cart process best practices that can make the task of knowing how to design

and e-commerce site easier. Popular methods of e-commerce design include using HTML (and stem languages), ASP, ASP.net, PHP, CSS, Ajax, JavaScript, XML and others. Popular methods for creating e-commerce graphics include using photoshop, flash and other graphics or video programs.

3.2 The Techniques for Web Design

In today's wired age, it is common knowledge that setting up one's own web page is not a particularly difficult endeavor. Indeed, anyone who has run a broad-based search through one of the major search engines has likely come across myriad "homemade" pages created by individuals reflecting their personal interests or some life ambition. To set up a web site, one really only needs an internet-connected computer, a web browser equipped with a basic text-editing application and an internet service provider (ISP) that offers web hosting for its users. Such users are unlikely to seek legal advice, and the legal issues that arise in relation to such sites tend to be limited to copyright and trademark violations by the site creators.

E-commerce, however, presents a wholly different challenge for the site creator. The sophisticated nature of the technology required, the number of players involved in setting up a site and facilitating transactions, the privacy concerns of customers who may be giving the site information about themselves, and a host of other realities of online business make effective legal representation critical in this arena. In addition, e-commerce set-up often requires great speed due to the nature of the industry, therefore adding an additional layer of complexity that calls for even more vigilance and preparedness on the part of the legal practitioners in structuring transactions and advising clients. This section will examine some general steps that most e-businesses will follow in establishing an e-commerce site and explore the necessity or possibility of legal representation at different critical junctures of the set-up process.

3.2.1 Registering a Domain Name

In setting up a website, the first step usually undertaken is registering a domain name. A domain name is the unique address that guides a user's browser to the computer on which the website resides. It usually consists of two elements, the top-level domain (TLD) and the second-level domain (SLD - which some simply refer to as the "domain name"). The most recognizable example of a TLD is the familiar ‘.com’ found at the end of many web addresses. In addition, there is another set of TLDs reserved for specific countries. These are known as the country code TLDs, or ccTLDs and include domains such as .ng for Nigeria, .jp for

Japan, .fr for France, e.t.c. The administration of these sites was given over to authorities in each nation, some of whom have restricted registration to residents of that nation while others have opened registration to anyone willing to pay the price. Finally, ICANN, the Internet Corporation for Assigned Names and Numbers, selected seven new gTLDs from proposals submitted by private applicants, including a new .biz TLD for businesses and .pro TLD for lawyers, physicians, and accountants.

(a) Choosing a Top-Level Domain (TLD)

Choosing a TLD then is the first step in registering a domain name. There are many registry services for the three unrestricted gTLDs, with a variety of prices and service options available. One must closely review the terms of the registrar service agreement policies. The domain holder's rights in a gTLD domain name are very tenuous; most registrars reserve the right to revoke a domain registration at their own discretion. In addition, all of the current open gTLDs (.com, .org.,.net) must abide by a standard Uniform Domain Name Dispute Resolution Agreement under which the domain holder is subject to a mandatory resolution procedure if any trademark owner complains about the domain name. In the end, most commercial concerns usually register the same name in all three gTLDs just to avoid confusing customers.

(b) Choosing a Second-Level Domain Name (SLD)

The next step is to choose a second-level domain (SLD or 2LD), which is the part of the domain name preceding the TLD. Common examples of SLDs include the "Amazon" of Amazon.com and the "CNN" of CNN.com. Choosing an SLD is something particularly important for those involved in e-commerce as they think about branding and trademarks. This choice is best made with the advice of trademark counsel. As most common words and short phrases have already been registered as second-level domains in the unrestricted gTLDs, a business may have to look to an unrestricted ccTLD or one of the new TLDs to register a manageable and easily remembered name. To find out if a name is available in the gTLDs, an e-business should use the VeriSign global registry service .One is safest when registering one's own trademark or trade name. An important first step in registering a second level domain name is a trademark search. It is crucial to make sure the domain name being registered is not a registered trademark belonging to someone else.

(c) Choosing a Registrar

Virtually all domain registrars have a very simple search process to see whether a name is available and many also have tools to help users find available domain names containing similar words if the original choice is unavailable. After finding an available domain name (top and second-

level), most registrars give registrants a choice of options in terms of pricing and duration. Registrars may only grant domain names for fixed periods of time, with an option to renew when the period lapses - and most registrars give options for different registration durations. Choosing a longer registration period has the advantage of locking the registrant into a registration at a price that will not rise, and some registrars offer discounts for registrations of longer duration. An equally important consideration that is often overlooked, however, is the Terms of Service (TOS) agreement, or the registration contract. Unfortunately, the registrars are often the guilty party in this oversight, as TOS agreements require the registrant to follow an often-subtle link; most registrars do not even require the TOS agreement page to be accessed before processing an order.

3.2.2 Hosting

After registering a domain name, most businesses will need to arrange for hosting services. The actual services offered in a web hosting agreement vary from provider to provider, making it difficult to generalise what, exactly, comprises hosting. In general, a host basically stores web pages for a client and operates a giant switchboard of sorts that connects web users' computers with requested pages from the hosted company. Hosts generally facilitate such storage and connections by operating hosting centers; large warehouse spaces that contain the computers on which clients' web pages are stored and connect them to the Internet via high-bandwidth fiber-optic lines.

(a) Advantages of Utilising a Host

While some companies may have the hardware, office space, and personnel resources to create their own servers and host their own sites, utilising a host and its hosting center provides some distinct advantages over managing one's own server. For one thing, outsourcing such services can save considerable money - hosting often runs about one quarter of the cost of running one's own site in terms of the aforementioned resources. Utilising a host may also decrease the chances of problems due to security breaches, power outages, and the like, if one selects a hosting center with round-the-clock security, back-up power generators, climate controlled storage space, and buildings created to withstand natural disasters. A final advantage of utilising a host is speed - the proximity of the server to the user is a major factor in transaction speed, although other factors affecting speed such as bandwidth speed, server speed, and number of hops may lead to situations where the closest server is not necessarily the fastest. As hosting centers give servers direct, high-capacity, and high-speed access to the internet backbone, using a host obviates the need to rewire one's physical place of business for the necessary level of connectivity.

Employing a host gives a client the advantage of faster connectivity to users/consumers that are located far from the headquarters of the company. Using a host also allows a business to set up a number of alternative servers in various locales in order to bring greater speed to a greater number of people.

(b) Legal Issues in Hosting Agreements

While registering a domain name can and is often done without legal representation, the many legal issues arising in the context of a hosting agreement make the services of a transactional lawyer a necessity. This is especially important considering the somewhat vague definition of what is included in hosting, as the practitioner must make certain that all of the e-commerce client's needs are met when drafting a hosting agreement or making changes to boilerplate hosting agreements. There are several major areas that require special attention to detail when structuring such deals, including: equipment, maintenance, service stoppages, security, and allocation of risk.

3.2.3 ISP Liability

A major issue in the internet context is determining who can be held responsible for wrongful acts on the part of internet users. Should only the user who actually commits the act be held liable, or should the Internet service provider or website operator be held liable for the wrongful acts of its users? These questions take on particular significance for an e-business when considering different options for a website. Offering consumers the ability to post reviews of products or participate in chat room or bulletin board discussions raises such issues of liability. When looking at hosting relationships as well, there is a question whether hosts can or should be held liable for wrongful acts of the parties it hosts.

3.2.4 Website Development

(a) In-house Development vs. Outsourcing

Like hosting, web design and programming is something that can be developed by in-house personnel or can be outsourced. While most businesses take advantage of the benefits of outsourcing the hosting of servers, web design and, to a lesser extent, programming are often kept in house for several reasons.

Web design is the most crucial aspect of an e-commerce business. The website is where customers interact with the business and buy products; in some instances (as with purely content providers), the website itself is the product. Another reason many companies keep web design and programming in-house is because the internet economy in general and e-

business specifically often calls for rapid changes - both in the content and design of websites. In terms of content, it may often be the case that an e-business needs to add updated products or product information to its website, either as part of the regular course of business or in response to some particular event in the market. For design in general, it will often come to the attention of those running an e-business that a particular new web design or layout of the site would be more attractive to customers or make the site easier to use. It may also come to the attention of those running the business - often in the form of customer complaints - that there is some sort of problem with the functionality of the site or its general layout. Keeping an in-house team of programmers/designers allows the e-business to respond to these stimuli quickly and keep the business running smoothly, which may not be possible if the services are outsourced due to lack of personnel, time or urgency on the part of the contracted designers and programmers. However, it is not always feasible for every business to keep a fully equipped in-house design and programming team. Some small businesses may not have the budget or the pressing business need to develop their own programmers. Large businesses may choose to outsource certain aspects of the design and programming services, such as graphic design, editing, and backend software development. Many of these outsourced services have to do with design and programming aspects that are not site-specific. One reason for this is the idea that an outside party may not fully understand the vision and purpose of the e-business, so should work only on the more generic aspects of design and programming. In other cases, it may not be cost-effective to develop one's own designers/programmers for things that are not site-specific. For instance, a site in need of graphics for its website may hire an outside graphic designer to develop pictures and icons. Outside programmers are often hired to implement credit card verification systems, inventory and archiving systems, and internal search engines. The more mechanical an aspect of website functioning is, the more likely it is to be outsourced. Thus, much programming outsourcing is geared towards backend functionality and internal aspects that keep a website running smoothly behind the scenes.

(b) Website Development and Infringing Conduct/Content

As with hosting, when programming and design services are outsourced, the e-business and its attorney must undertake an analysis regarding allocation of risk and responsibility through the services contract. Two main areas in which there can be problems are liability for copyright or trademark infringement and service disruptions or other problems due to malfunctioning programming. In terms of copyright, an e-business should communicate to a hired designer that all graphics, photographs, and text used on the website must be original or in the public domain.

As most of the photographs and graphics currently used on websites and in print media are copyrighted, the e-business practitioner must diligently attempt to determine whether non-original graphics/photos used by an outside designer are truly in the public domain. While these copyright concerns apply equally to businesses that design their own websites, it is important to note that contracting the work out will not save the website publisher itself from escaping liability for any infringement, due to the basic tort concept of vicarious liability. One possible way around this is to create a contract that specifically puts the burden of non infringement on the contracted designer and holds it liable for any infringement. This does not absolve the publisher from copyright infringement, however, and a business may be limited to seeking post-judgment contribution from the designer or may be left to satisfy a judgment if the designer is insolvent or otherwise judgment-proof. While such contractual language is still better than nothing, perhaps the best technique to employ is to carefully check a contracted designer's work or avoid using non-original content at all.

(c) Program Malfunctions

Programming malfunctions and other associated problems can also be handled through contracts between the e-business and its hired programmers. To the extent that any such problems adversely affect customers (as in overcharges on credit cards, failure to register sales and ship products, etc.), there are similarities to the copyright context regarding satisfaction of a wronged third party. This is a particularly grave concern when problems with programs result in security breaches, which may lead to anything from a hacker putting offensive material on a business' website to the release of personal information or credit card numbers. Once again, when drafting a contract between an e-business and outside programmers, an attorney should be aware of possible problems that may result from faulty or otherwise malfunctioning programs. Contracts should consider a mechanism to address unforeseeable problems should they arise and arrange for necessary modifications to remedy them, as well as remedies for substandard or negligent programming. When hiring outside programmers, e-businesses should inquire into past problems with the programmers' work and their general service records and customer satisfaction in order to make an informed judgment about the likelihood of problems and potential adverse effects on customers. However, it should be recognized that programming is an ever-changing field and therefore never free from errors; this should also lead the e-business to implement contingency plans for problems due to program malfunctions and have mechanisms in place to remedy such problems immediately.

(d) Software Licensing and Work-For-Hire Contracts

Another aspect of programming that warrants brief mention for its legal implications is programmers' use of software and software licensing. For instance, a website may wish to use automated software for matching users up with products, but the contracted programmer is unable to develop a program due to budgetary or technological constraints. In such a case, the e-business or its programmer may look into commercial software available to meet this need. As most software requires a license for each distinct use, an e-business should make certain to pay for the license for the use of such software by its hired programmers. While this will increase the cost of programming services, it is important to ensure the software is being used legally so as to eliminate any possible cause of action by the software rights holder. The cost of these licenses may be charged in the services agreement with the programmers or the e-business can exercise more caution and arrange to pay the software licensing fees directly to the software developers. The latter option would prevent the e-business from assuming any liability in the case of an unscrupulous programmer who charged for software licensing fees but did not pay the software developers. Of course, this may not always be a concern, as many programmers use their own software and certain software is in the public domain. In drafting a programming arrangement, the diligent attorney should inquire into the software to be used and make sure any needed licenses are obtained.

In addition to respecting others' rights in their software, it is important for an e-business to take measures to protect the software and other materials (including the web page itself, databases, etc.) developed for the e-business itself. All free-lance and other contract work should be done on a "work-for-hire" basis which, when specified in advance by the parties in their written agreement, allows all copyrights in the contractor's work to vest automatically in the e-business. If such agreements are not executed in advance, then the material belongs to the contractor and the e-business must obtain a written license to use the work on the website, or preferably an outright assignment of all rights. The work-for-hire rights automatically accrue to employers when the creation of the website material is required as part of the employee's job duties.

3.2.5 Marketing and Advertising

In order to be successful, an e-business must engage in advertising and marketing. These areas have more in common and substantial crossover with their counterparts in the traditional bricks and mortar business world than the more technology-specific concerns above. However, advertising and marketing in the online medium also raise considerable novel issues of which the e-commerce practitioner should be aware.

(a) Advertising

Advertising one's e-business online usually takes one of two forms:

- the purchase of advertising space on another's website, or
- swapping advertising space with another business or participating in a general advertising exchange program.

Purchasing advertising on another website requires an e-business to determine its potential/desired customers and find an appropriate site through which to reach them. Advertising and marketing online offer e-businesses the advantage of reaching a well-defined target audience easily by buying space on websites whose visitors are in the same demographic as those sought as e-business customers. Websites are able to gather varying amounts of information about the types of visitors to their site with sites requiring registration or subscription particularly adept at gathering detailed information. This offers a distinct advantage over the types of data that can be gained from other media such as television and radio. Websites can give a more detailed breakdown of their audiences. This information can include age, sex, race, nationality, and other categories that make targeted advertising and marketing a reality - meaning less money is wasted going after groups to whom the e-business is not really catered. Websites also can give potential advertisers information about the volume of traffic to their sites and therefore the size of the audience that will be reached by the advertisements.

A preliminary step in finding advertising space is determining what types of websites attract users who would be potential customers of the e-business. In some cases, this may be easy - a golf news website would be a good fit for an online seller of golf equipment - while in other cases more research will need to be done to determine a good fit between advertiser and host. Most large websites have links to general advertising information and contact information for their advertising sales departments. Prospective advertisers can then make appropriate inquiries into the audience they would reach by advertising on a particular website, the costs of advertising, etc. One other option is to go through a large-scale advertising service, such as DoubleClick, that offers advertisers access to a network of partner websites in different categories. Such services act as middlemen, bringing together advertisers and those with advertising space in similar fields, eliminating many of the transaction costs associated with searching for individual advertising hosts. Utilising such a service also will likely increase the audience the advertisement reaches by displaying a client's advertisement across a wider array of host sites, although this may come at the expense of reaching a more narrowly defined target audience.

Legal issues in renting advertising space mainly involve the agreements between advertiser and host. An e-business may have different options in structuring these agreements, such as choosing to pay a fixed price for advertising for a particular period of time, paying the host on a sliding scale depending on the amount of traffic to the host site or actual clicks through to the targeted (advertising) site, or paying the host a commission on sales made as a result of the advert. Issues concerning ad placement, number of views, viewership guarantees, ad tracking, and click-through fraud prevention should all be spelled out in the advertising agreement. As an e-business' advertising needs are sure to change over time, an agreement should also contain provisions regarding changing one's advertisements during the course of the contract; such a provision also allows changes to be made in response to consumer complaints/feedback. The advertising host likely will want to include in the agreement clauses indemnifying it in certain situations.

These situations - which should also be kept in mind if the e-business itself decides to sell advertising space - include copyright and trademark infringement as well as cases involving fraud or misleading advertising. Copyright and trademark infringement issues may arise as a result of infringement directly in the displayed advertisement itself or by linking through the advertisement to a site that contains infringing works. In the former case, the infringement itself is posted on the host site and the host is therefore potentially liable for copyright infringement. The case of advertisements linking to a site that contains a copyright or trademark infringement may give rise to a claim of contributory or vicarious infringement against the linking party. Contributory copyright infringement results when "one who, with knowledge of the infringing activity, induces, causes, or materially contributes to the infringing conduct of another". To deal with these situations, the parties should agree upon which party will be held liable for such infringement, as well as create a plan of action in the case that a possible infringement is brought to the attention of the host or advertiser.

(b) Direct Marketing

In addition to advertising, many e-businesses also reach potential customers via email. Contacting customers through email usually takes two forms:

- targeted emails directed at past customers or registered users of an e-business
- mass emails sent to a mailing list usually compiled by a third party.

Many respected e-businesses use the first form of targeted emails to customers or registered users in order to keep these consumers apprised of new developments at the e-commerce site, such as new products, sales/promotions, or a new version of the website. When registering at a website (usually for the promise of greater access to information, products, etc.) or when purchasing a product, most e-businesses usually ask for a customer's email address and other basic information (more information is usually required when purchasing a product because of the need for shipping and credit card information). A common technique of many e-businesses is to have email offerings included in the options when a visitor signs up as a member of the website or purchases a product. Visitors are often given the option to receive regular newsletters from the e-business, emails regarding sales or promotions at the website, and a variety of other choices. These options are offered through a series of boxes that show a preference for the service offered when checked. A common ploy of websites to get visitors signed up for the services is to have all the boxes checked as the default, leaving the visitor to uncheck the boxes representing unwanted services. This is an example of an opt-out system - the consumer is required to take active steps to opt out of the plan of services; the passive consumer receives the emails as the default. The other option would be an opt-in plan, whereby the consumer who wished to receive emails would have to take active steps (i.e. checking the boxes) to get on the mailing list. In such an opt-in scheme, the passive consumer receives nothing as the default.

The question of whether to use an opt-in or opt-out scheme for targeted emails is a sensitive one that brings in questions of consumer expectations and privacy. An opt-out scheme may seem invasive to some consumers because they end up receiving emails for which they did not explicitly sign up. However, the user's feeling of inconvenience is probably less in this case than it is in the case where the user simply received unsolicited mail from a website or e-business with which he or she had no prior contact. This is largely because the consumer has already taken active steps to develop a relationship with the e-business, either by signing up as a registered member or by purchasing a product.

Due to this relationship, the consumer has or should have more of an expectation that the e-business will contact him/her in the future and should not be put out by receiving emails from the e-business. Of course, the e-business should use discretion and good business judgment in sending emails - consumers are a lot less likely to be rankled by a bi-weekly email than a daily newsletter or other persistent contact that may lead to annoyance. And an e-business should always make it clear in the email sent that the consumer has the option to opt out of the email service by sending a reply email to unsubscribe from the periodic mailings or by visiting the website to take an email address off

the mailing list. Making it difficult to opt out of the mailings or not taking people off the list who wish to be removed may lead to people feeling harassed or invaded and result in a complaint against the offending website. Some e-businesses may make the decision that they wish to play it safe and not offend anyone, and therefore use a strict opt-in sign-up system for marketing emails. Most, however, will find it is worth losing a small percentage of upset customers for the ability to reach more users than they would be able to with an opt-in scheme. Even if most who receive the marketing emails simply delete them, it may be worth it to send them to reach those who do read them and to take a chance that a catchy subject line can get the deleters to read the messages from time to time. In the end, an opt-out scheme probably will lead to a greater audience for these marketing emails and will typically not be considered unduly invasive due to the consumer's pre-existing relationship with the e-business, but the business should make certain that recipients who do not wish to receive emails have a quick and easy method of unsubscribing from a mailing list or otherwise opting out of the service. An e-business should not take lightly the potential for a strong negative reaction on the part of consumers due to the receipt of unwanted email.

The other major type of email marketing involves sending unsolicited emails to mailing lists compiled by a third party or an e-business itself. Unsolicited emails such as these raise significant concerns that do not arise where the parties have a prior connection. This type of system goes beyond a mere opt-out system in pushing emails upon potentially unwilling recipients because the recipients have no pre-existing relationship with the entity sending the emails. Due to this lack of a relationship, the emails are more likely to be viewed as an invasion of a consumer's privacy or as a form of harassment. Such unsolicited emails, also known as spam, are generally considered a form of junk mail and are typically utilised by and associated with pornography websites, get-rich-quick schemes, and generally solicitous and invasive businesses. The annoyance to, and resulting outrage of, recipients, as well as the stigma of being associated with a certain type of business entity is enough to steer many e-businesses away from utilising spam, but there are legal considerations that militate against such practices as well.

In addition to legal issues raised by reaching potential customers through unsolicited emails, there are other measures taken to prevent internet users from receiving spam that may adversely affect an e-business attempting to utilise mass mailings.
In the end, the threat of an e-business' emails being blocked by a private service, triggering penalties under the proposed federal statute, or causing loss of business due to annoyance to potential customers leads to the conclusion that mass unsolicited mailings are an unwise (and

potentially illegal) marketing method to be employed by an enterprise. Furthermore, promoting an e-business via spam may also constitute a breach of the company's ISP/host agreement and result in termination of service. The best way to reach customers therefore is through the aforementioned techniques of advertising or using targeted email directed at past customers or registered users of a website. If an e-business wishes to reach a wider audience via email, the best way to do so may be to partner with another entity that sends targeted emails to customers and is willing to add an advertisement or link to the e-business' website, in exchange for similar concessions or some other consideration. If such a plan is followed, the businesses involved should make it clear to customers in the agreement to receive emails (the box checking form discussed previously) that their emails may contain information about its partners and affiliates. A decision to enter such an agreement should account for potential adverse customer reactions (depending on the level of perceived intrusion) and any implementation of the agreement should always offer the recipient to opt out of some or all of the services.

(c) Search Engines

Perhaps, the most effective and cost-efficient means for an e-business to reach potential customers is through search engines, a method by which many consumers are matched up with businesses offering products or services they desire.

There are two major types of search engines:

Web directories and engines utilising spiders or web crawlers to catalog websites. Directories generally work by soliciting websites for inclusion in a web directory, which is then searched by users. In this sense, it is an active process that requires affirmative action on the part of an e-business in order to get listed in the directory. The most well known web directory is Yahoo!, which accepts submissions from websites to be included in a particular category under the Yahoo! organisation scheme. Simply suggesting a site does not guarantee immediate inclusion in the Yahoo! directory, however, as Yahoo! must review the site prior to its inclusion to determine whether it is in the appropriate category and whether it is appropriate to include the website at all.

Search engines that utilise spiders or web crawling technologies to catalog websites operate in a very different manner than web directories. These engines use technological means (often called robots or spiders) to scour the web and then catalog the websites in their engines to be pulled up when matched with user search terms. An example of a popular search engine that utilises such technology is Google, which

uses its Googlebot web crawler to explore the vast offering of web pages available on the internet and index them for use in its search engine. This offers an advantage to e-commerce sites over directory services in the sense that no affirmative action is necessary to have one's website listed; the web crawlers automatically add all cataloged sites to the search engine's index. In addition, some robot-based engines, such as Google, offer submission of URLs for faster addition to their indexes.
In contrast to the early days of search engines, the ability to purchase higher rankings on the top search engines no longer exists. Understanding the ranking systems of search engines, however, allows an e-business to take measures in several major areas to ensure higher placement. These areas include click popularity, stickiness, link popularity, and page-related factors such as tags and keywords.

Click popularity is a measure of the number of times search engine users click on a particular site when it is returned as a result of a search. The greater the number of users who choose a particular site, the higher ranking it will have. DirectHit, a search engine whose technology is used by a number of other major search engines, utilises a unique ranking system that incorporates click popularity to match users up with the most popular sites in the search field. The DirectHit ranking scheme also incorporates the related concept of stickiness, which is a measure of the length of time users spend at a site once they click through to it from a search engine. The greater the stickiness, measured by the length of time between clicks on different results of an original search, the higher the ranking the engine gives the website. In order to achieve greater click popularity, an e-business should look to have a good, descriptive title that sets it apart from other sites. As users of search engines see only a title and brief description (either based on a submitted description or the first lines of text on the website) when results of a search are returned, the title and description should be tailored to entice viewers or otherwise set one's site apart from others' sites. As to stickiness, the layout of one's website and the overall design will be very important to users when determining how much time to spend at a site. The greater the extent to which an e-business can further draw users into its website, the greater the stickiness will be and the higher the ranking. When designing a site or overseeing the work of outside designers, an e-business should consider factors influencing stickiness, such as general layout, ease of navigability, functionality, and frequency of site updates. Self-audits measuring stickiness can often be performed by hosting services, from which an e-business can gain valuable information regarding its visitors and how long they stay, allowing tailoring of a website to increase stickiness by better meeting its visitors' preferences and computing needs.

Link popularity is very important in certain search engines' ranking schemes, particularly Google's. This metric basically measures the number of links to a website from other websites, giving higher rankings to sites with more links to them from other websites. In addition to measuring sheer numbers, certain ranking schemes (most notably Google) take into account the origin of the links, weighing links from more highly rated pages greater than those of lesser-ranked pages. The effect of link popularity on ranking schemes thus may influence marketing plans when determining affiliate and partnership agreements with other websites, as well as different advertising strategies.

Page-related factors deal less with viewer's perceptions of a website and more with how a search engine reads the internal placement of keywords in the text of a website and use of meta-tags in web programming. In this sense, while the above factors more heavily influence the ranking or placement of a site on a results page, the page-related factors are the gatekeepers for whether a site is returned as a result in a search at all. An e-business website thus must reverse-engineer searches in a way, making a determination of how users will get to the site through a search engine or how it wishes these users to get to its site. The main way to ensure that users get to one's site is to create a set of keywords that describe the content and product offerings of the website.

3.3 Benefits of E-Commerce Web Design

Allows for Faster, Easier, Efficient Discovery

An online business' ability to be discovered by shoppers, current customers and search engines is extremely important for merchants who hope to grow their e-commerce venture into a success. Quality e-commerce design allows for quicker, easier, more efficient discovery by consumers or search engine bots. By using e-commerce design best practices and following certain usability guidelines, you'll find that the discovery process will nearly take care of itself, meaning the merchant will have little to no maintenance down the road. The faster, easier and more efficient you can make your processes of discovery, the faster your business will grow to the next stage. For best results, keep improving, keep testing and always refine your designs.

Potential to Improve Accessibility

Having an e-commerce business that is easy to discover is only part of the formula within e-commerce design. In addition, merchants will need a store that is accessible to their shoppers, existing customers and even search engines. Accessibility is a major factor when designing and implementing a site, if users and search engines cannot access all your important pages you will find that it may reduce your chances of success or at the very least slow down chances you would have had if the store

was originally built with accessibility best practices in mind. Use hyper links rather than image links, utilise a sitemap, keep track of indexed pages and link your site together in an organised, easy to understand, easy to use way. Make sure that pages that lie deeper within the site can be accessed from pages higher up in the site and vice versa. Making your business site more accessible in the beginning will save the merchant time, hassle and re-designing in the end.

Potential to Improve Usability

Using quality e-commerce design methods will not only make your site easier to discover and access, it can also potentially improve how shoppers, current customers and search engine use the site. The way in which a site is built can interfere with how users interact and use the site. If you put up features that turn into roadblocks, the site will become less usable. If you put up features that are designed with usability best practices in mind you'll find that shoppers will be happy with their experience, customers will return and search engines will give you the placement you deserve within their listings. Many merchants have no idea that the way in which a site is designed can actually make or break the sites usability in the end. Study what users in your niche want, give it to them and make it easy to understand, within a visible location that is easy for anyone to use.

Easier to Maintain Over Time

If an e-commerce design is done correctly from the very beginning, it will make the task of design maintenance much easier over time. Typically, merchants will have to update their site regularly anyway, but using design best practices from the start will make your updates less frequent and easier to implement. not only that, but whenever new e-commerce design guidelines are discovered, you'll find that it takes you less time and less steps to catch up with the pack, giving you more time to actually run the business, manage customers, products and things like marketing strategies or promotions. In short, make your site easy to discover, make it accessible to users and make it usable to anyone who may eventually land on your page. In the end, you'll spend less time updating and maintaining your site than others who were not aware, ignored or didn't pay close attention during the design and implementation phase of the business.

SELF-ASSESSMENT EXERCISE

Briefly explain the techniques for web design.

4.0 CONCLUSION

E-commerce web design is generally defined as the planning, creation and arrangement of files, text, graphics and processes used within an e-commerce enabled website. E-commerce designs have evolved over the years from plain looking designs with few graphics and little appeal to fully interactive e-commerce sites using the latest in graphic design and programming technologies.
E-commerce design today typically consists of several unique features or elements and can be performed using a variety of popular web design methods.

To set up a website, one really only needs an internet-connected computer, a web browser equipped with a basic text-editing application and an internet service provider (ISP) that offers web hosting for its users. Some benefits of e-commerce web design include: allows for faster, easier, efficient discovery and potential to improve accessibility e.t.c.

5.0 SUMMARY

In this unit, we explained about e-commerce web design, its design methods and features, techniques for web design and benefits of e-commerce web design. We hope that you understood the topics discussed, you may now attempt the questions below.

6.0 TUTOR-MARKED ASSIGNMENT

i. Extensively discuss about the benefits of e-commerce web design.
ii. Briefly explain the other techniques for web design not mentioned in this unit.

7.0 REFERENCES/FURTHER READING

Cameron, D. (1997). *Electronic Commerce: The New Business Platform for the Internet*. Computer Technology Research.

Choi, S., Stahl, D.O & Whinstone, A.B. (1997). *The Economics of Electronic Commerce*. Indianapolis, IN: Macmillan.

Choi, *et al*. (1997). *The Economics of Electronic Commerce*. Macmillan Technical Publications, p. 18.

Coulouris, G., Dollimore J. & Kindberg, T. (2001). *Distributed Systems Concepts and Design*. Harlow: Addison-Wesley.

Cronin, M. J. (2000). *Unchained Value: The New Logic of Digital Business.* U.S.A.: Harvard Business School Press.

Fournier, R. (1998). *A Methodology for Client Server and Web Application Development*. Yourdon Press.

Howcroft, D & Carroll, J. (2000). *A Proposed Methodology for Web Development.* Proceedings of the European Conference on Information Systems, Vienna, pp. 290-297.

Ince, D. (2003). *Developing Internet Applications.* Pearson Education Limited.

Kalakota, R. (1999) *E-Business*. Reading, MA: Addison-Wesley.

Kalakota, R. & Robinson M. (1999) *e-Business, Roadmap for Success*. Reading, MA: Addison-Wesley.

Kalakota, R. & Whinstone A.B. (1997). *Electronic Commerce*. Reading, MA: Addison-Wesley.

Kalakota, R. & Whinston A.B. (1997). *Electronic Commerce: A Manager's Guide*. Addison Wesley Longman, Inc.40

Kalakota, R. & Whinston,A.B.(1996)..*Frontiers of Electronic Commerce*. Addison-Wesley.

Kleindl, B. A. (2003). *Strategic Electronic Marketing: Managing e-business,* Thomson Learning, Mason, USA.

Korper, S. & Ellis J. (2000). *The E-Commerce Book: Building the E-Empire*. Morgan Kaufmann.

Kou, W. (2003). *Payment Technologies for E-Commerce*. Springer.

Lallana, E., Quimbo, R.S. & Zorayda R.B.A.(2000). *E-Primer: An Introduction to E-commerce*. DAI-AGILE, a USAID-Funded Project.

Lamont, D. (2001*). Conquering the Wireless World: The Age of M-commerce.* United Kingdom: Capstone Publishing Inc.

Mann, C., Eckert S. E. & Knight S.C. (2000). *Global Electronic Commerce: A Policy Primer.* Washington DC: Institute for International Economics.

May, P. (2000). *The Business of E-commerce*. Cambridge Press.

McFadyen, T.M. (2008). *e-commerce Best Practices*. McFadyen Solutions.

Plant, R. (2000). *e-commerce Formulation of Strategy.* U.S.A.: Prentice Hall Inc.

Rahman, S. (2000). *Electronic Commerce: Opportunities and Challenges.* IGI Global.

Reynolds, J. (2004). *The Complete E-Commerce book.* CMP.

Rich, J. (2008). *Design & Launch an e-commerce Business in a week.* Entrepreneur Press.

Rockwell, B. (1998). *Using The Internet To Compete in a Global Marketplace*. Wiley & Sons.

Rosen, A. (2000). T*he E-commerce Question and Answer Book: A Survival Guide for Business Managers.* American Management Association.

Schneider, G. (2010). *Electronic Commerce.* Course Technology.

Slawsky, J. H. & Zafar S. (2005). *Developing and Managing a Successful Payment Card*. Ashgate Publishing.

Smith, D. (2001). *The E-business Book: A Step-by-Step Guide to E-commerce and Beyond.* Princeton: Bloomberg Press.

Standing, C. (2000). *Internet Commerce Development.* Artech House Publishers, Boston.

Timmers, P. (2000). *Electronic Commerce-Strategies and Models for Business-to-Business Trading*. John Wiley & Sons,

Treese, G. W. & Stewart, L. C. (1998). *Designing Systems For Internet Commerce.* Addison-Wesley.

Trepper C.H. (2000). *E-Commerce Strategies*. Microsoft Press.

Turban, E., Lee, J., King D. & Chung, H.M. (1999). *Electronic Commerce: A Managerial Perspective.* Prentice Hall.

www.mhhe.com
www.commerce.net
www.whatis.com/e-commerce
www.straight-on.com/e-commerce
www.ecworld.utexas.edu

UNIT 2 METHODOLOGIES FOR DEVELOPING E-COMMERCE WEBSITES

CONTENTS

1.0 INTRODUCTION

The popular assumption is that processes, methods and techniques used for applications development have changed radically as the focus of applications has moved from the traditional information systems domain to the WWW. In this unit, the requirements of development methodologies in the Web era are examined. An internet commerce development methodology is proposed which addresses many of these issues (ICDM).
The methodology is compared with other web development approaches and the issues related to evaluating methodologies are discussed.

2.0 OBJECTIVES

At the end of this unit, you should be able to:

- explain the term ICDM
- compare ICDM with other web development methodologies
- evaluate the methodologies
- explain the limitations of the methodology

3.0 MAIN CONTENT

3.1 Developing Web Applications

The internet and the world-wide-web have had a profound impact on the business world. The changing business landscape has also impacted on the requirements of systems development approaches .The list below provides a representative summary of the issues related to e-commerce applications development.

- Business focus
  E-business should be driven by business strategy not the implementation of technology
- External focus (Customer focus)
  E-business applications have a customer focus which impact on the gathering of requirements and development team composition
- Speed of change

The rapidly changing business environment influences the need for short development cycles and the need for evolutionary development approaches. It would appear that many of the issues being discussed in electronic commerce (EC) development are not particularly new. Taking a business perspective, the role of methodologies, evolutionary development approaches, speed of development and effective project management have all been topics of concern for many years. Rather than viewing web commerce as a radically new development paradigm it can be viewed as an evolutionary stage in the discipline of information systems.

3.2 Key Features of ICDM

In this section, the main features of the Internet Commerce Development Methodology (ICDM) are outlined.

ICDM attempts to address the issues related to emphasizing a business focus, external focus and speed of change. The description of the methodology is guided by the framework for analysing methodologies provided by Avison and Fitzgerald.

a) Philosophy

ICDM views e-commerce developments as organisational initiatives and as such takes into account the need to address strategic, business, managerial, and organisational culture issues as well as the technical details of design and implementation. In this respect, the Methodology takes a holistic subjectivist perspective arguing that e-commerce

applications will not be effective unless the organisational management and culture is conducive to change.

Defining an organisation's e-business strategy involves dealing with a range of information sources and opinions. A question such as "how can the organisation effectively employ e-commerce?"; is inherently subjective in nature and any definition of effective will be socially constructed to a large extent. ICDM relies on competitive analysis to help shape the e-business direction (SWOT Analysis).

ICDM emphasises the organisational environment in that it considers the merging of functional boundaries and the political and cultural nuances of working in teams. The methods used for the development of business strategy and for the definition of requirements (brainstorming and groups requirements sessions) are intensely social in nature. This factor recognises strategy is a socially constituted process and is not static.

Internet commerce should be a continually evolving feature of the organisation and as such any methodology to support it should be interwoven with a dynamic learning environment.

As a consequence of the changes in the business environment, organisations have had to change in form. This has influenced organisational structure and management approaches. Flatter organisational structures have replaced many deep hierarchical organisational structures. Team based structures which frequently change according to the required skills-mix are an alternative to rigid departmental structures based upon functional lines. Teams are usually faster to adapt to a service and customer focus than large departments. The Internet Commerce Development Methodology (ICDM) can only be successful if its context is appropriate and effective. An organisational methodology, such as ICDM, is inextricably linked with the organisational structures, management strategies and approaches.

b) Scope

ICDM is a business analysis methodology as well as a systems development methodology. Many traditional information systems methodologies only cover the more technical aspects of systems development and do not start with any form of business analysis. Internet commerce is first and foremost a business direction and hence requires a thorough analysis of its place in the overall business strategy.
The Internet Commerce Development Methodology (ICDM) takes into account the wider trends in the business world and society in its strategy development phase with the SWOT analysis. The changing profile of the

consumer is important and user or customer involvement is factored in at various points in the methodology. It is no longer sufficient for a methodology to be inwardly focused; it must provide a mechanism for scanning the wider business environment. With the trend towards globalisation of economic markets an organisation must be continually looking for opportunities and learning on a global level.

ICDM recommends a management structure for the evolution of Internet commerce in an organisation.

Taking a project of electronic commerce is dangerous as the systems are continually changing. An evolutionary perspective is more apposite. The first tier of the three-tier management and development structure has the responsibility of overseeing the evolving form of e-business.

c) Techniques and Tools

ICDM has a number of component phases to guide the development of strategy and the website. Issues related to web page design, database connections, security issues, and implementation tools and methods are all covered.

d) Framework

ICDM provides a framework for developing internet commerce. It is not a prescriptive methodology with a large number of steps to be completed. It is a loose fitting framework for developing strategies and for the evolutionary development of web based systems. As a result it is applicable to a wide range of situations where organisations are looking to gain from investing in internet commerce. The approach acknowledges that organisational development via Internet commerce is sufficiently complex and varied to warrant the use of guidelines rather than detailed tasks that lack general applicability. This allows the company to adapt the methodology to the specialized conditions of the organisation.

3.3 Overview of ICDM

This unit proposes the Internet Commerce Development Methodology (ICDM) as a framework for the development of internet commerce in an organisational context. ICDM provides both a management strategy and a development strategy which are driven by the needs of the business. Hence, ICDM gives particular attention to providing a business focus.

ICDM has the following components and features which are described in the remainder of this section.

- Web Management structure
- Strategy and business analysis development phase

SWOT Analysis
Level of Change - Business Process Re-engineering or Value Chain Analysis

- User Involvment
- Meta-development strategy
- Analysis phase

Requirements techniques
Functional requirements framework

- Physical architecture framework
- Design phase
- Component implementation and evolution

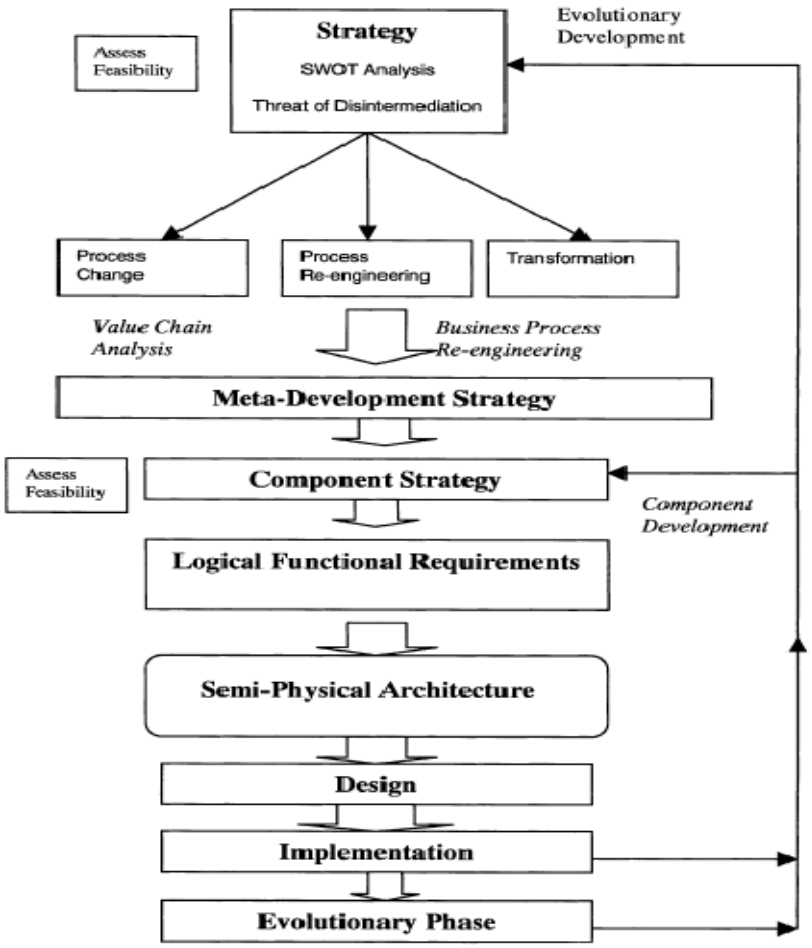


Figure 2.1; Phases of ICDM

3.3.1 Web Management Strategy

ICDM recommends the management and development of e-business systems on three levels. The overall management and development of the entire web strategy can be seen as an on-going task as well as the development of the functional components of a web application. The first tier is a meta-development and management perspective that provides a framework for development. The second tier concerns the development of the components of the website. At both levels the work must be seen as being evolutionary in nature, to cope with the inevitable changes that will have to be made. The third tier in the management and development structure is concerned with developing and implementing the system and so includes technical development teams, analysts, content specialists and web development consultants.

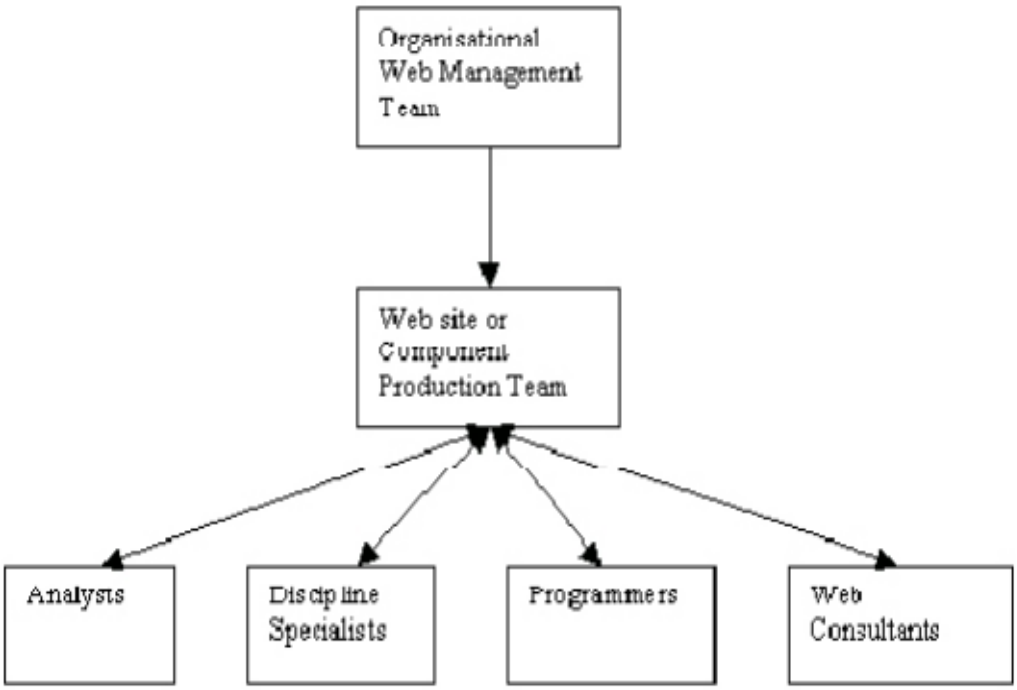


Fig.2.2: Web Management and Development Structure

3.3.2 Strategy Development Phase of ICDM

The use of the internet for business purposes can take many forms. The internet can be used strategically as a transformation agent to radically change the nature of the business. It can also be employed to improve processes or parts of processes over time and incrementally add-value to the business. The Internet Commerce Development Methodology (ICDM), proposed here, provides a strategic planning approach that considers which option is most appropriate for a given situation. ICDM

draws upon Business Process Re-engineering (BPR) and Value Chain Analysis for its core strategic planning tools.

To decide upon a strategy for a business, business unit or functional area, managers need to assess an organisation's competitive situation. This involves assessing the organisation and its environment. The process is known as competitive analysis. SWOT analysis is one method of competitive analysis. The competitive situation for the company is assessed by examining its strengths (S), weaknesses (W), environmental opportunities (O) and threats (T). The competitive analysis will yield different results for each business examined.

The strengths examined in the SWOT analysis are the strengths of the business. The internal strengths are features of the organisation such as streamlined administrative systems, or technologically adept staff. The internal weaknesses of the organisation can be detailed in much the same way. The wider environment can be scanned for economic, technological and social trends that can be exploited. For example, new government legislation may create an opportunity for some organisations.

Besides performing a competitive analysis, organisations should assess the threat of disintermediation. Due to the ease with which suppliers of products and services can market and sell directly to consumers, those companies that act as intermediaries in the distribution chain risk being by-passed. This would clearly have disastrous consequences for the intermediaries and is termed disintermediation. The businesses that are most at risk of disintermediation are those that do not significantly add value to the products and services they are distributing.

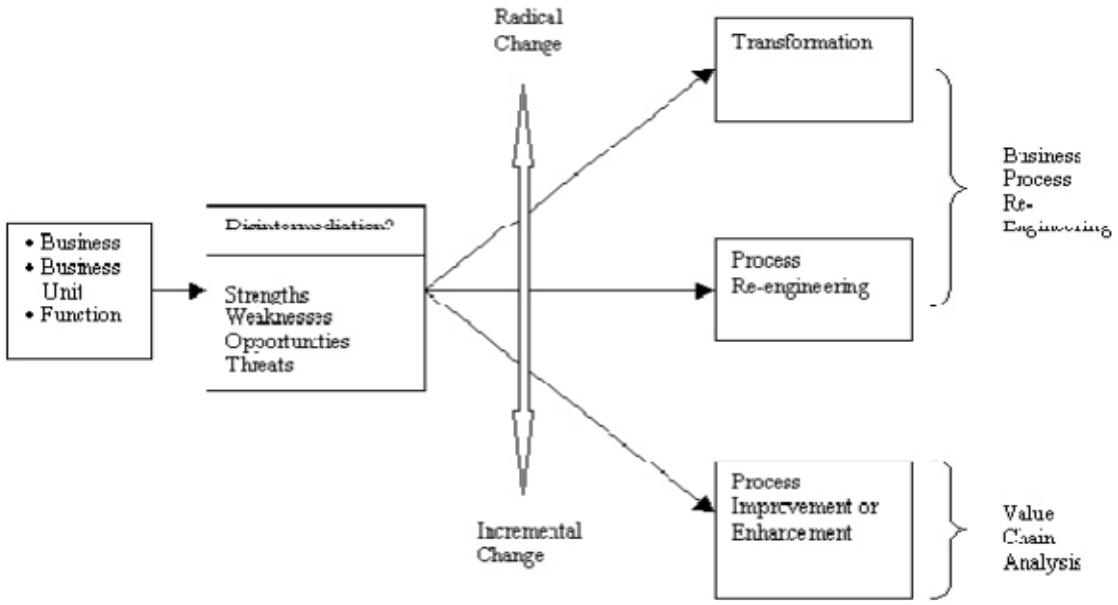


Figure 2.3: ICDM Strategic Planning Phase

The scale and scope of the changes should fall into one of three categories: Process change, process-reengineering, or transformation.

- Process change is related to the enhancement or modification of an organisational process with the aid of the Internet. Value chain analysis can be used to identify where value can be added for the customer.

- Process re-engineering is the complete redesign of a process with the aid of the Internet.
- Transformation is the radical change of a business leveraging internet technology.

3.3.3 Meta-Development Strategy

There are a number of strategies that can be employed by a company when managing the development of a website. The options depend upon the amount of regulation or control that is desired, both for content and design.

1) Plan the entire site and regulate its distributed development in consultation with business units.
2) Plan the core of the website and allow business units the autonomy to develop their own neighbourhoods.

ICDM proposes that the decision on which option to adopt should be taken by the web management team.

3.3.4 User Involvement

Customers or suppliers (users) of the systems should be involved at various stages of the e-business operations and be included in periodic reviews. Customer input is essential at the strategy development and business analysis stages and may involve the use of market research teams to obtain information on what customers require and barriers to using the web. More detailed requirements can be obtained in Group Requirements Sessions (GRS), telephone interviews or questionnaires. Customers can be involved in evaluating design issues through the use of prototype web systems and they should be included in testing and evaluation of the website. Feedback can be obtained from users once the website is 'live'. As the e-business strategy is likely to evolve through time, focus groups can be used to provide input through reviewing the current system and making recommendations.

3.3.5 Site and Component Development

Functional or divisional components of the internet system can be approached as discrete projects. The implications of the integration with other components of the Web application still need to be considered. A functional component could be a component that provides customers with the option to interrogate a database of products, or to obtain details about customers for marketing purposes. Even so, a multidisciplinary team is still required because any component of a website is still concerned with implementing business strategy not just technology.

3.3.6 Requirements Analysis Techniques

There are a number of information gathering techniques that are especially relevant to the process of defining the requirements of web applications. These methods are useful for projects where some degree of innovation can substantially improve the success of the system by providing a competitive edge for the organisation. Using group communication techniques can speed up the definition of the logical requirements for a web application. The two group communication techniques used in the Internet Commerce Development Methodology (ICDM) are brainstorming and the Group Requirements Sessions (GRS). The first is used to define alternative ways of using Internet commerce in the business and the second is about obtaining the detailed requirements within a relatively fast time frame with involvement from customers, suppliers and internal staff.

Prototypes can be developed to help in defining the requirements. In particular, the detailed information requirements of transaction and marketing systems can be trialed with customers. The prototypes,

however, will be used to a greater extent in the design phase of development.

3.3.7 Functional Requirements Framework

Web applications fall into a number of categories. These functional applications need the detailed definition of their requirements. It is beyond the scope of this course to explain the detailed requirements of these systems but the analysts need to use the analysis techniques described earlier to make sure that the business objectives are being met.

3.3.8 Physical Architecture Framework

The techniques used for defining the requirements for an internet project depend on the type of system and its functionality. There are three fundamental types of web systems: document publishing systems, basic interactive systems, and complex transaction systems. It is not always the case that Web projects intending to transform the organisation require complex transaction systems. Useful information, clearly and effectively presented, with some simple database interactivity has the potential to make a major impact on a business.

3.3.9 Design Phase

The design phase involves designing the network infrastructure, developing the website and developing security controls. The website design should consider:

- Desired Image
- Usability
- Promotion
- Evaluation with customers

3.3.10 Implementation and Evolution Phases

The implementation of the website relates to the meta-development strategies discussed earlier. It is unlikely, unless the Website is small, the site will be designed and implemented in one project cycle. Web applications evolve and so rarely have a well defined project completion. However, there are cases where components of the Web site, such as transaction modules can be implemented and remain reasonably stable. The continual evolution of the site should also be managed by the organisation's Web management team. This team should be made up of senior people from each functional unit of the organisation. It is their task to oversee the implementation of the web

strategy and changes in strategic direction. They should also set policy on who can add to the website and content and design guidelines.

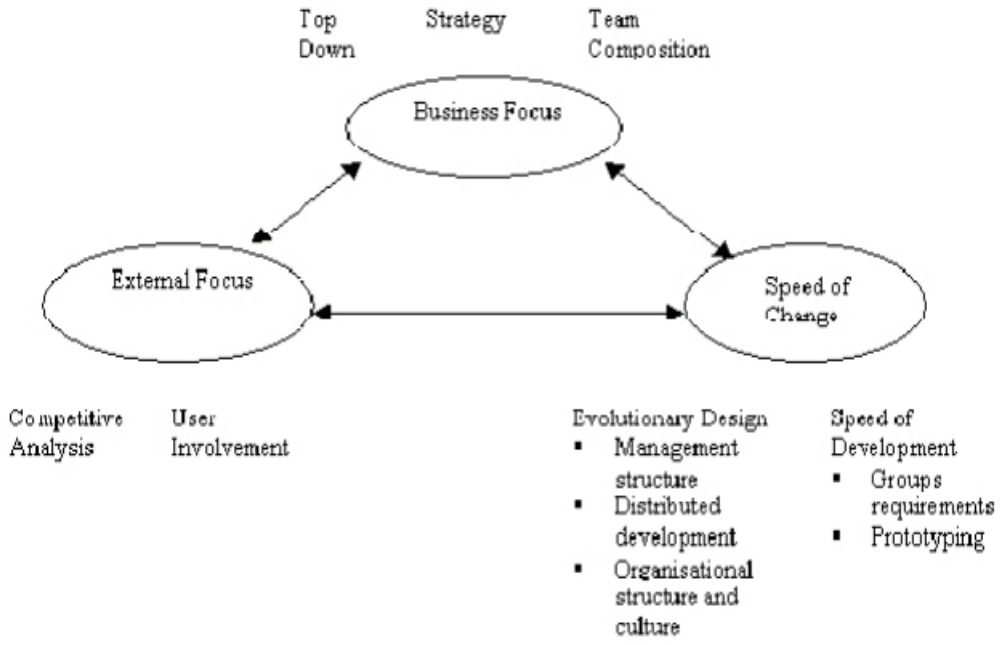


Fig.2.4: Key Requirements and Techniques of ICDM

3.4. A Comparison of ICDM With Other Web Development Methodologies

To highlight the contribution of ICDM, we now compare it with a number of other web applications development methodologies. The framework used for the comparison uses philosophy, scope, key techniques and tools, the focus of the methodology, internal/external emphasis and the systems development perspective. The three other methods concentrate on the task of website development and the technical architecture.

ICDM is the only method that emphasises strategy and business analysis. Indeed, the focus is equally on developing a management structure and conducive organisational culture as well as web applications development. The other methodologies do not directly address the importance of evolutionary development issues taking more of a traditional project approach to development. It is important that methodologies for web development include ways of obtaining customer (user) and outside input in the requirements, design and evaluation stages. Only ICDM addresses this issue.

Table 2.1: A Comparison of Web Development Methodologies

	ICDM (Standing)	Howcroft & Carroll	Fournier, R.	Web Application Extension (Conallen)
Philosophy	Subjectivist	Objectivist/ Structured	Objectivist	Objectivist
Scope	Business analysis, Organisational change, Analysis, Design, Implementation	Analysis to implementation	Analysis to implementation	Analysis to implementation
Key Techniques and Tools	Management structure Team composition SWOT analysis and BPR Group requirements definition User involvement framework Design guidelines	Objectives analysis Website design	Technical architecture design Joint Facilitated Sessions	Object oriented analysis and design
Focus of Methodology	Organisational infrastructure/ Web Application	Web Application	Information Architecture	Software Application
Systems Development View	Evolutionary view	Project view	Project view	Project/ Evolutionary view
External/ Internal Emphasis	External	Internal	Internal	Internal

3.5 Evaluating Methodologies

A development methodology can be evaluated in a variety of ways. It could be evaluated according to a framework of requirements or rationale to determine if these are met with the approach. The benefit of this is that it can be carried out by the system developers and so is relatively inexpensive and fast to conduct. The weakness is that all problems are unlikely to be identified.

Focus groups are another method of evaluating methodologies. ICDM has been evaluated with several focus groups. Each group was presented with extensive material documenting ICDM. A seminar lasting three hours was also conducted, at the end of which the participants discussed

the methodology. The participants were then asked to list the strengths and weaknesses of the methodology for developing Internet commerce systems. This approach has the advantage of getting input from a range of people including practitioners and experts in the field. Again the limitation is that all issues and problems may not be identified until the methodology is used in practice. The methodology can be evaluated by adopting it as the development methodology on a project as a form of action research. This is an ideal approach to evaluating a methodology. The difficulty is getting a company to trial the use of the methodology when it has not been 'tested' in practice.

3.6 Limitations of the Methodology

A number of limitations or weaknesses were identified by the focus groups in relation to ICDM. Whilst the consideration of developing an effective organisational culture was listed as strength of the methodology it was mentioned that more details need to be included on how to facilitate this. Creating an innovative organisational culture is not a simple task and of course every company is at a different starting point. Perhaps unrealistic expectations are made on development methodologies but it does highlight the recognition given by practitioners to the issue and the difficulties they face.

A recurring issue in relation to systems development methodologies is providing sufficiently flexible guidelines and providing support for industry specific factors. Many industry sectors, for example, employ e-commerce primarily for business-to-business activities and although the methodology provides some discussion of the development issues in this area it is rather limited. The travel agents commented on the time involved in working through such a methodology. As small businesses, much of the development work would be out-sourced. Although ICDM provides guidelines for selecting web consultants it still exposes the developer to the full range of tasks and phases of web development.

SELF-ASSESSMENT EXERCISE

Describe the methodology for developing e-commerce websites you learnt from this unit.

4.0 CONCLUSION

Although ICDM has been recognised as having some useful and effective features for web applications development, there are still issues which need to be addressed. Practitioners, it would seem, desire approaches that are tailor made for their industry. This is difficult to fully consider in a methodology other than through multiple variations

of the methods and techniques. However, there may be a clear divide for methodologies which focus on business-to-business and business-to-consumer applications development. In addition, the methodology and organisational environment boundary is blurring. Practitioners require detailed guidelines on how to create a conducive organisational culture that will stimulate innovative thinking and wide-spread adoption of e-commerce initiatives. Both of these issues are difficult for methodology designers to adequately take on board but will nonetheless be essential if methodologies are to retain their sense of relevancy

5.0 SUMMARY

In this unit, we have explained the methodologies of developing e-commerce websites. With the hope that you understood the topics discussed, you may now answer the question below.

6.0 TUTOR-MARKED ASSIGNMENT

Extensively discuss about 3 other methodologies for developing e-commerce websites.

7.0 REFERENCES/FURTHER READING

Cameron, D. (1997). *Electronic Commerce: The New Business Platform for the Internet*. Computer Technology Research.

Choi, S., Stahl, D.O & Whinstone, A.B. (1997). *The Economics of Electronic Commerce*. Indianapolis, IN: Macmillan.

Choi, *et al*. (1997). *The Economics of Electronic Commerce*. Macmillan Technical Publications, p. 18.

Coulouris, G., Dollimore J. & Kindberg, T. (2001). *Distributed Systems Concepts and Design*. Harlow: Addison-Wesley.

Cronin, M. J. (2000). *Unchained Value: The New Logic of Digital Business.* U.S.A.: Harvard Business School Press.

Fournier, R. (1998). *A Methodology for Client Server and Web Application Development*. Yourdon Press.

Howcroft, D & Carroll, J. (2000). *A Proposed Methodology for Web Development.* Proceedings of the European Conference on Information Systems, Vienna, pp. 290-297.

Ince, D. (2003). *Developing Internet Applications.* Pearson Education Limited.

Kalakota, R. (1999). *E-Business*. Reading, MA: Addison-Wesley.

Kalakota, R. & Robinson M. (1999) *e-Business, Roadmap for Success*. Reading, MA: Addison-Wesley.

Kalakota, R. & Whinstone A.B. (1997). *Electronic Commerce*. Reading, MA: Addison-Wesley.

Kalakota, R. & Whinston A.B. (1997). *Electronic Commerce: A Manager's Guide*. Addison Wesley Longman, Inc.40

Kalakota, R. & Whinston,A.B.(1996)..*Frontiers of Electronic Commerce*. Addison-Wesley.

Kleindl, B. A. (2003). *Strategic Electronic Marketing: Managing e-business,* Thomson Learning, Mason, USA.

Korper, S. & Ellis J. (2000). *The E-Commerce Book: Building the E-Empire*. Morgan Kaufmann.

Kou, W. (2003). *Payment Technologies for E-Commerce*. Springer.

Lallana, E., Quimbo, R.S. & Zorayda R.B.A.(2000). *E-Primer: An Introduction to E-commerce*. DAI-AGILE, a USAID-Funded Project.

Lamont, D. (2001*). Conquering the Wireless World: The Age of M-commerce.* United Kingdom: Capstone Publishing Inc.

Mann, C., Eckert S. E. & Knight S.C. (2000). *Global Electronic Commerce: A Policy Primer.* Washington DC: Institute for International Economics.

May, P. (2000). *The Business of E-commerce*. Cambridge Press.

McFadyen, T.M. (2008). *e-commerce Best Practices*. McFadyen Solutions.

Plant, R. (2000). *e-commerce Formulation of Strategy.* U.S.A.: Prentice Hall Inc.

Rahman, S. (2000). *Electronic Commerce: Opportunities and Challenges.* IGI Global.

Reynolds, J. (2004). *The Complete E-Commerce book*. CMP.

Rich, J. (2008). *Design & Launch an e-commerce Business in a week.* Entrepreneur Press.

Rockwell, B. (1998). *Using The Internet To Compete in a Global Marketplace*. Wiley & Sons.

Rosen, A. (2000). T*he E-commerce Question and Answer Book: A Survival Guide for Business Managers.* American Management Association.

Schneider, G. (2010). *Electronic Commerce.* Course Technology.

Slawsky, J. H. & Zafar S. (2005). *Developing and Managing a Successful Payment Card*. Ashgate Publishing.

Smith, D. (2001). *The E-business Book: A Step-by-Step Guide to E-commerce and Beyond.* Princeton: Bloomberg Press.

Standing, C. (2000). *Internet Commerce Development.* Artech House Publishers, Boston.

Timmers, P. (2000). *Electronic Commerce-Strategies and Models for Business-to-Business Trading*. John Wiley & Sons,

Treese, G. W. & Stewart, L. C. (1998). *Designing Systems For Internet Commerce.* Addison-Wesley.

Trepper C.H. (2000). *E-Commerce Strategies*. Microsoft Press.

Turban, E., Lee, J., King D. & Chung, H.M. (1999). *Electronic Commerce: A Managerial Perspective.* Prentice Hall.

c.standing@ecu.edu.au

www.elsevier.com

UNIT 3 MANAGING WEBSITES FOR E-COMMERCE

CONTENTS

1.0 INTRODUCTION

In this unit, we shall discuss the management of websites for e-commerce which include developing checklist, hosting checklist, security issues in web design and ways to improve the usability of the website.

2.0 OBJECTIVES

At the end of this unit, you should be able to:

- itemise the website development checklist
- explain the hosting checklist
- discuss the security issues in web design
- highlight the ways to improve the usability of e-commerce websites.

3.0 MAIN CONTENT

3.1 Website Development Checklist

The following issues should be addressed in a website development agreement:

- Scope of work - initial development, updates, and changes
- Transfer of work to the website owner's server
- Functionality- performance standards and technical specifications for both internet users and company personnel
- Acceptance processes- testing, milestones, and final acceptance
- Fees - fixed fees, sliding fees, and overall budget

- Warranties-standards and remedies
- Right of termination or withholding of fees for unacceptable work, consecutive failures, or failure to meet milestones
- Training of e-business personnel by website developers
- Schedule for work to be completed and procedures for changing schedules
- Ownership of work-content, graphics, general design, and other intellectual property used or created
- Placement of copyright notices on the website
- Obtaining appropriate licenses, clearances, and permissions to use others' works and materials
- Resources to be provided by each party - software, hardware, project management
- Indemnities for violations of rights of the parties or third parties and limitation of liability
- Confidentiality - e-business and developer confidentiality and user privacy
- Standard contractual provisions - dispute resolution, governing law, and amendment of contract

3.2 Website Hosting Checklist

The following issues in these general areas should be taken into consideration when drafting a hosting agreement:

Equipment

- Equipment ownership
- Location of equipment - division between equipment stored at host facilities and the e-business offices
- Equipment management and maintenance - performing back-up, fixing equipment problems, and updating equipment
- The e-business' right of access to equipment at hosting facilities
- Connectivity and performance issues - connection speed, maintenance of connections, and general standards of performance
- Ownership/control of data stored in the equipment

Traffic and Maintenance Issues

- Uptime guarantees - percentage of time a website will be up
- Response when the connection is lost and website is down or otherwise disrupted
- Response to changes in traffic - necessary upgrades/updates to deal with greater influx of traffic
- Maintenance performance and effect on connection

Service Agreements

- Services included in the agreement - standard services and custom services
- Fee schedules - fixed costs for standard services and sliding costs for additional services
- Warranties regarding level and quality of service
- Acts/omissions constituting breach
- Assignment of the services contract- host's and customer's obligations

Risk and Indemnification

- Responsibility for injuries to third parties resulting from security breaches and loss of service
- Responsibility for ensuring compliance with laws of other nations where users are located
- Disaster recovery plans and procedures - for both the host and website owner
- Circumstances under which a site can be shut down - responsibility for resulting injuries
- Actions to be taken upon breach

3.3 Security Issues in E-Commerce Web Design

Security is an area that is critical to the effective functioning of an e-business and has major implications for both hosting and development agreements. Breaches of security may lead to service interruptions and corresponding loss of business or, worse, may lead to the loss of sensitive business information or even customer information - ranging from email addresses to credit card numbers. Such dire consequences make it imperative that security is given high priority in setting up an e-commerce site and that an e-business makes security a priority when arranging for hosting and programming services. We will address some common concerns an e-business should consider when addressing security, including: access attacks, information theft, and damage to equipment and systems.

Access Attacks

Access attacks, also known as denial of service (DoS) attacks, are a relatively easy way to disable a website. Basically, those behind such attacks overwhelm the servers, routers, and other network infrastructure of a website by inundating the host with a deluge of information packets, effectively crippling the website and preventing access by customers. Such attacks have received a lot of attention recently, as major internet presences have had service disrupted for long periods of time by DoS attacks, costing the businesses millions of dollars in lost sales.

Compounding the problem for the affected websites, the attackers in those cases used a technique that made it difficult to trace the source of the data flood and ferret out the perpetrators - making it difficult to both stop the flow as well as potentially seek any remuneration from or punishment of the attackers. Such episodes exhibit the potential deleterious effects of DoS attacks on e-businesses, where every minute of lost service may result in hundreds of lost sales and corresponding revenue.

As DoS attacks are not completely preventable and the motivations of attackers are unclear, every e-business should have an emergency plan incorporating:

- countermeasures to be taken when such attacks occur (such as blocking packets from the originators of the attack or having a back-up hosting arrangement to switch to in case of an attack).
- information-gathering techniques for determining the source of attacks after the fact.
- a public relations strategy aimed at customers, business partners, and investors addressing the loss of service and its consequences.

If an e-business utilises an outside host instead of hosting its own website, the countermeasure aspect of such an emergency plan is one that can take shape in the hosting services agreement. While it is impossible for hosts to fully prevent such attacks without seriously inhibiting the speed and efficiency of the network backbone, most hosts have some network security resources available to combat DoS attacks. When arranging for a host, an e-business should inquire into how the host typically handles DoS attacks and a client's options in minimising the impact of or thwarting such attacks. An agreement between e-business and host can then incorporate a plan in the case of a DoS attack - what the parties' responsibilities are in handling the attack, any guarantees a host may make concerning its ability to reroute traffic and limit the scope/duration of an attack, and other issues relating to allocation of risk and responsibility (e.g., who will be held liable for injuries to third parties, such as customers).

Information Theft

Information theft can have even greater negative effects than an access attack. While DoS attacks may leave customers frustrated and cut into a day's revenues, the stealing of proprietary information can lead to loss of sensitive business information ranging from financial data to long-term corporate strategy. If customer information is stolen, such theft can also lead to the erosion of customers' trust in both a specific e-business as well as the general medium of online business transactions. In addition,

such theft may result in a lawsuit directed at the e-business for not adequately safeguarding such information. Thus the loss of proprietary information can often have longer lasting effects than mere denial of service and resulting loss of sales.

While DoS attacks work by overwhelming one's network infrastructure, information theft is achieved by exploiting weaknesses in software and technological protections. Proprietary information may be stolen by hackers getting around or through a network's firewall by unscrupulous programmers who leave a backdoor in software applications for their access at a later time, or by disgruntled employees with access to files who wish to personally profit from company information/resources. Dealing with employees who may have the motive and means to steal sensitive company information is largely an internal personnel and security matter for an e-business to address. Problems due to hackers penetrating a network or programming deficiencies allowing access to sensitive information, on the other hand, must be addressed when considering developing in-house programmers or outsourcing programming. If an e-business determines it is in its interest to outsource such services, potential partners should be vigorously screened and service agreements should be carefully drafted to ensure specific security standards as well as allocate responsibility for security breaches.

Damage to Equipment, Software or Data

A third and final type of security threat is damage to equipment, software, or data. Damage to equipment can be prevented in a relatively straightforward manner by assuring limited access to equipment and appropriate physical security. For those e-businesses housing their hardware at their offices, the nature of the business makes it imperative that a high priority is given to ensuring the physical security of system hardware. The level of physical security is also an important issue to consider when choosing a host, and is a consideration that should be explicitly addressed in any hosting agreement. Software and data can be corrupted or damaged by viruses that are permitted to enter a business' internal network or directly by those who gain access by penetrating a firewall or exploiting another weakness. The risk of damage by viruses can be minimised by adopting appropriate technological measures to screen incoming packets, while damage resulting from unauthorised access can be combated by taking the measures to minimise information theft discussed above. Even if these technological measures fail, an e-business can minimise the fallout from damage to software and data by periodically backing up data and applications to utilise in the event of damage or corruption. While the total loss of information through information theft can often cause irreparable damage, a well-prepared e-

business can seriously minimise the negative impact of data/software damage through such periodic backups.

Minimizing Security Risks through Audits and Contracts

An e-business can additionally minimise all these types of security risks by hiring a third-party security consultant to conduct periodic audits of the business network and/or physical premises for weaknesses in security. Such auditors can often detect hidden backdoors in programs, weaknesses in firewalls, as well as prior undetected security breaches. Some businesses may also wish to create a position for a chief security officer or make sure its systems administrator has expertise in security issues. As discussed above, however, many security concerns can be effectively dealt with through appropriate agreements with service providers (hosts, programmers, etc.). To this end, the e-commerce practitioner should be aware of the following security issues when drafting agreements for an e-business client:

Hosting Agreements

- How does the host generally handle DoS attacks? (What is its default position?)
- What services does it offer to thwart/minimize the impact of DoS attacks? What security options does it recommend as a core package?
- How will the proposed security measures affect network performance?
- Can DoS attacks launched at other businesses hosted in the same facility affect the client e-business' own website?
- Does the host have its own network security personnel or is such security work outsourced?
- What is the level of physical security (access, alarms, guards, etc.) at the hosting facility?
- What security problems/breaches have arisen in the past and what has been done to prevent their recurrence? (One may choose to draft an agreement incorporating certain types of risks as being the responsibility of one or another party; a list of past problems establishes the foreseeability of particular kinds of breaches.)
- What guarantees is the host willing to make concerning both physical and technological security measures? Does it carry liability insurance? (Due to the great loss of money that may result from loss of service, an E-business should consider a contracting party's ability to pay should damages result from a security breach.)

Development Agreements

- What level of technological security measures is available? What level is recommended? (As with most business decisions, choosing the level of security involves a cost-benefit analysis - the extra security from a more expensive technological protection may not be worth the cost.)
- How do various levels of security affect the performance of software applications or the website as a whole?
- Have other clients had security problems with any of the programmer's services/products? What was done to remedy such problems?
- What guarantees is the programming service willing to make regarding the inviolability of its technological security protections? Does it carry liability insurance?

3.4 Ways to Improve the Usability of Your E-Commerce Site

More and more money is being spent online as consumers switch to shopping on the web. Yet so many websites do not seem to have considered the usability of their e-commerce site and of their ordering process, resulting in users prematurely giving up and abandoning their shopping basket. Here are ways to improve the usability of your e-commerce site, so that you can maximise your conversion rate and help convert the contents of users' shopping baskets into orders:

1. Identify users with their e-mail address

How many different usernames do you use for e-commerce website accounts? Now, how many different e-mail addresses do you use for e-commerce website accounts? It is better that you not only have fewer e-mail addresses, but also that you find it much easier to remember your e-mail address, than your username.

Always try and use an e-mail address to identify users, rather than a username. This is because e-mail addresses are easier to remember and are more standard, meaning that you do not have to worry so much about special characters. They're also always unique, so you can avoid the problem of another user having already taken a username.

2. Break up the ordering process into bite size chunks

The ordering process can often be quite complex. Users must typically enter a delivery address, choose their delivery method, enter their payment methods and then finally confirm their order. Trying to do all this at once can cause problems because users need to enter so much information. Breaking the process up into smaller chunks allows users to

tackle each step at a time. There's less to think about at each step and less information to enter. For example, Amazon breaks the ordering process up into the following steps:
Login
Choose delivery address
Choose delivery options
Enter payment details
Review and submit the order

3. Tell users where they are and where they are going

Isn't it awful when you're on a journey and you don't know how far you've been, or how far you still have to go. Well it can be just as frustrating for users when they're trying to buy something online and they don't know how many more steps are required before finally making the purchase. This is why it's important to let users know where they are in the ordering process, and how far they have to go. This example shows the current ordering step, and the steps still to go:

Alternatively, you could just specify the step number, together with the total number of steps left in the ordering process. For example, "enter delivery address (step 1 of 4)".

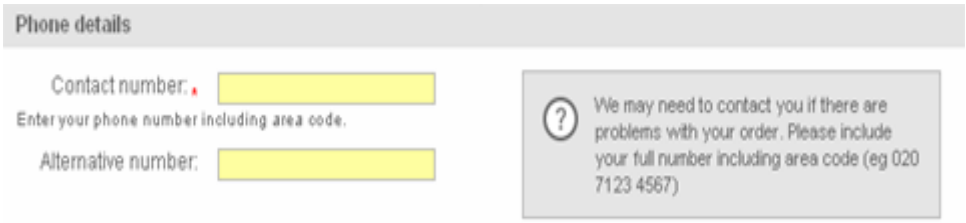
4. Don't make the ordering process harder than it needs to be

It is amazing just how many e-commerce websites make the ordering process harder than it really needs to be. For example, users are asked to enter their credit or debit card expiry date as a month (Jan, Feb., March etc.), instead of a number (01, 02, 03 etc.). This forces them to convert the number shown on the credit or debit card to the corresponding month, instead of just entering the number straight in. At each step of the ordering process think about how this step could be simplified. For example, does all of the input fields really need to be captured? By simplifying and streamlining the ordering process you should be able to minimise the number of problems users might experience along the way.

5. Address common user queries

It is important that throughout the ordering process, common user questions and queries are addressed. For example, users might want to know how long delivery is likely to take, or if they have to enter extra information such as their date of birth, they might want to know why this is.

Go through the ordering process and ask yourself at each stage: what queries might a user have? Answers to these queries should either be provided on-screen, or through a hyperlink. This example explains why users need to enter a contact telephone number:



6. Highlight required fields

There's nothing more annoying than filling out a form, only to have it returned because required information is missing. It should be made very clear from the offset exactly which fields need to be filled in and which are optional. This can be done by simply marking those fields that need to be filled in, usually with a "*".

7. Make the ordering process flexible

By making the ordering process flexible, users should not only feel more in control, but should also be less likely to come across critical problems. For example, some e-commerce websites force users to undertake a postcode look up when entering an address. This can cause problems for those users with unconventional or new postal addresses because no list is returned for their postcode, or their particular address is not present in the list. This means that they simply can't enter their address and therefore can't place their order.

There are good examples of an e-commerce websites that has built flexibility into their ordering process. They allow users to place orders without having to register with the website, meaning that those users who are not comfortable registering can still place orders.

8. Put users' minds at ease

Many consumers are still not 100% comfortable buying online. They might be concerned about giving out their credit card number, or about not receiving the items they've paid for. It's therefore important that you allay these concerns and put users' minds at ease. Try and think about the concerns users might have at each step of the ordering process, and try to address them. For example, make a note at the payment stage of

your ordering process for explaining to users that it's totally safe to shop at your website.

9. Have users confirm their order before buying then provide confirmation.

The last stage of the ordering process should always ask the user to confirm their order. Users should be able to see a summary of their order, including how much it will cost and where it will be delivered to. They should then either be able to cancel or place the order. Confirmation should be provided for orders placed, so that users know whether their order was successful or not. This should include information such as:
The expected delivery date
The order number
How to track the order online (if this is possible)

10. Send a confirmation e-mail
Once a user has placed his order, a confirmation e-mail should be sent out straightaway. Confirmation e-mails should:

- Be brief: tell users what they are likely to want to know, such as the order number
- Should be a real customer service ambassador for the company

Remember, it's much cheaper for someone to resolve an issue online rather than having to call customer services. By second guessing users' queries, such as outlining how long a delivery is likely to take, calls to customer services can be minimised.

Following these guidelines should not only make your e-commerce website more usable, but ultimately more successful as well. Of course, you can only go so far with usability guidelines, which is why usability testing should be an important part of every e-commerce project. Follow usability guidelines and carry out usability testing with real users and you should find that your e-commerce website is not only usable, but very effective as well.

4.0 CONCLUSION

Some issues that should be addressed in a website development agreement include: scope of work, transfer of work to the website owner's server, functionality, acceptance processes, fees, warranties, right of termination or withholding of fees for unacceptable work, consecutive failures, or failure to meet milestones and training of e-business personnel by website developers amongst others. Some issues in these general areas that should be taken into consideration when drafting a hosting agreement include equipment, traffic and maintenance issues service agreements amongst others. Security is an area that is critical to the effective functioning of an e-business and has major implications for both hosting and development agreements. Some common concerns an e-business should consider when addressing security include: access attacks, information theft, and damage to equipment and systems.

Among the ways to improve the usability of your e-commerce site include: identify users with their e-mail address, break up the ordering process into bite size chunks, tell users where they are and where they're going and many others.

SELF-ASSESSMENT EXCERCISE

Give a detailed explanation of the website development and hosting checklist.

5.0 SUMMARY

In this unit, we discussed about the e-commerce website development and hosting checklist, security issues in web design and ways to improve the usability of e-commerce websites. You can now answer the questions below hoping that you understood the topics discussed in this unit.

6.0 TUTOR-MARKED ASSIGNMENT

i. Explain 5 security issues that affect e-commerce websites aside the ones mentioned above.
ii. Mention other ways in which the usability of e-commerce websites can be improved.

7.0 REFERENCES/FURTHER READING

Cameron, D. (1997). *Electronic Commerce: The New Business Platform for the Internet*. Computer Technology Research.

Choi, S., Stahl, D.O & Whinstone, A.B. (1997). *The Economics of Electronic Commerce*. Indianapolis, IN: Macmillan.

Choi, *et al*. (1997). *The Economics of Electronic Commerce*. Macmillan Technical Publications, p. 18.

Coulouris, G., Dollimore J. & Kindberg, T. (2001). *Distributed Systems Concepts and Design*. Harlow: Addison-Wesley.

Cronin, M. J. (2000). *Unchained Value: The New Logic of Digital Business.* U.S.A.: Harvard Business School Press.

Fournier, R. (1998). *A Methodology for Client Server and Web Application Development*. Yourdon Press.

Howcroft, D & Carroll, J. (2000). *A Proposed Methodology for Web Development.* Proceedings of the European Conference on Information Systems, Vienna, pp. 290-297.

Ince, D. (2003). *Developing Internet Applications.* Pearson Education Limited.

Kalakota, R. (1999). *E-Business*. Reading, MA: Addison-Wesley.

Kalakota, R. & Robinson M. (1999) *e-Business, Roadmap for Success*. Reading, MA: Addison-Wesley.

Kalakota, R. & Whinstone A.B. (1997). *Electronic Commerce*. Reading, MA: Addison-Wesley.

Kalakota, R. & Whinston A.B. (1997). *Electronic Commerce: A Manager's Guide*. Addison Wesley Longman, Inc.40

Kalakota, R. & Whinston,A.B.(1996)..*Frontiers of Electronic Commerce*. Addison-Wesley.

Kleindl, B. A. (2003). *Strategic Electronic Marketing: Managing e-business,* Thomson Learning, Mason, USA.

Korper, S. & Ellis J. (2000). *The E-Commerce Book: Building the E-Empire*. Morgan Kaufmann.

Kou, W. (2003). *Payment Technologies for E-Commerce*. Springer.

Lallana, E., Quimbo, R.S. & Zorayda R.B.A.(2000). *E-Primer: An Introduction to E-commerce*. DAI-AGILE, a USAID-Funded Project.

Lamont, D. (2001*). Conquering the Wireless World: The Age of M-commerce.* United Kingdom: Capstone Publishing Inc.

Mann, C., Eckert S. E. & Knight S.C. (2000). *Global Electronic Commerce: A Policy Primer*. Washington DC: Institute for International Economics.

May, P. (2000). *The Business of E-commerce*. Cambridge Press.

McFadyen, T.M. (2008). *e-commerce Best Practices*. McFadyen Solutions.

Plant, R. (2000). *e-commerce Formulation of Strategy.* U.S.A.: Prentice Hall Inc.

Rahman, S. (2000). *Electronic Commerce: Opportunities and Challenges.* IGI Global.

Reynolds, J. (2004). *The Complete E-Commerce book.* CMP.

Rich, J. (2008). *Design & Launch an e-commerce Business in a week.* Entrepreneur Press.

Rockwell, B. (1998). *Using The Internet To Compete in a Global Marketplace*. Wiley & Sons.

Rosen, A. (2000). T*he E-commerce Question and Answer Book: A Survival Guide for Business Managers.* American Management Association.

Schneider, G. (2010). *Electronic Commerce.* Course Technology.

Slawsky, J. H. & Zafar S. (2005). *Developing and Managing a Successful Payment Card*. Ashgate Publishing.

Smith, D. (2001). *The E-business Book: A Step-by-Step Guide to E-commerce and Beyond.* Princeton: Bloomberg Press.

Standing, C. (2000). *Internet Commerce Development.* Artech House Publishers, Boston.

Timmers, P. (2000). *Electronic Commerce-Strategies and Models for Business-to-Business Trading*. John Wiley & Sons,

Treese, G. W. & Stewart, L. C. (1998). *Designing Systems For Internet Commerce.* Addison-Wesley.

Trepper C.H. (2000). *E-Commerce Strategies*. Microsoft Press.

Turban, E., Lee, J., King D. & Chung, H.M. (1999). *Electronic Commerce: A Managerial Perspective.* Prentice Hall.

www.c.standing@ecu.edu.au

www.elsevier.com

UNIT 4 CREATING AND MAINTAINING A SUCCESSFUL WEB PRESENCE

CONTENTS

1.0 INTRODUCTION

In this unit, we shall look at the steps on how to create and maintain a successful web presence.

2.0 OBJECTIVES

At the end of this unit, you should be able to:

- list the steps on how to create and maintain a successful web presence
- explain the steps mentioned above.

3.0 MAIN CONTENT

3.1 Steps on How to Create and Maintain a Successful Web Presence

Step 1: Set Your Goals

1. Why do you want a website? The first step is to identify the reasons for creating a website and how it will fit into your overall goals. You need to identify your strengths and opportunities, and how they tie with your plan of creating a website. You also need to look into the threats and weaknesses that can adversely affect your plans and derail your goals.

2. How does a website fit your overall business plan? What will a website do for you and your business? A website may be your meal ticket and the main income source; or it may be for additional income. If you have an existing business, it can be

used as a marketing tool, additional revenue source, or a springboard of an entirely different business model. Some of the key questions you need to ask include:

- do you want to earn money directly from your website? Is it supposed to be profitable?
- is your website simply for marketing purposes, with no direct revenue generation objectives?
- will your website be used solely for customer and/or technical support?
- is your website part of a multi-channel strategy (e.g. You run a brick and mortar store or a catalog together with a website)? Or is it a single channel strategy (e.g. you are in an internet business)?
- or will your website be an information source?

3. What is the size of the online market? Is your market growing? Read up about your industry and your market. A number of websites offer informative studies about certain industries and web audiences, and some of them are free.
4. What are the goals for your website? Set some achievable metrics for your site. How much traffic do you envision for your site in its first month? And what is your growth target every month thereafter? How much revenue do you want to earn from the website in its first year? What conversion rate (the number of visitors who actually buy vis-à-vis the number of visitors) can you expect? And how much do you intend to spend to acquire your visitors?

To get some benchmark figures, check out forums catering to general webmaster issues or sites where webmasters in your niche actually congregate because there is so much to learn from these forums. You can also search for previous studies done by internet research companies (there may be one available for your industry).

Step 2: Develop Your Website Strategy

1. Who is your website target audience? Many website owners create a site without having a clear idea of their target audience. They may think it is one group, only to find that they are attracting a different set altogether. One thing may apply, though: even if the internet reaches the world, the world is not your audience, but only its specific section.
   An upscale website selling handcrafted objects from different countries may target interior designers and decorators, upper income families looking for unique pieces for their homes, and people looking for one-of-a-kind gifts. A small business

information site may target those looking to start their own small businesses or those who have already started their businesses, but not those looking for jobs and work opportunities from their homes. Your target audience will dictate your content, even your marketing approaches.

2. What typically appeals to your target audience? What are the expectations of your typical customer from a website such as yours? Are you providing those information and features? For example, a parent looking for a daycare service for their children on the web will want information on the location of the daycare, preferably a map and clear directions from major thoroughfares. They will also want to know the rates, and whether part-time and/or full-time is allowed. They also want a typical schedule of activities for different age groups, the ratio of adults to children, and a host of other things. Your website must meet at the very least the minimum expectations of your customers.

3. How are the other websites (your competitors) reaching out to this target audience? The first step is to make a list of the number of players offering the same type of information, products or services out there. If you are planning a website design company, note that Google alone has 11 million results for this term – which implies that you will be faced with a huge number of competitors, many of whom have been established in the field for years. Make a list of the top websites in your field, as well as sites that are in the same league as yours in terms of resources and traffic levels. Study the different information and features on their website. Gauge the technology used to serve the content (e.g. multimedia, flash, etc.). Understand what makes people flock to these websites and what makes these websites successful.
4. How will you measure your performance? Right at the start – before even launching the website – you need to define your measures of success. What will make you say that your website is a success (or failure)?

Many web owners make the mistake of launching a site without even knowing and understanding the tools they need to ascertain whether their efforts are a success or a bust. They start a website, yet unsure of what to really expect. You need to have quantifiable and qualitative measures of success to gauge the performance of your website. These metrics will help you assess your current performance and help you assess succeeding improvements. The various metrics will provide you with a complete picture of your site's performance, and can provide you with the confidence to make future decisions. Here are some of the metrics that you need to understand:

- *Traffic metrics*. How many people are visiting your site? Where are they coming from? What sites are linking and bringing traffic to your website? What keywords do visitors use in the search engines to find your site? How long are they staying in your site? You need to start understanding the various terms to measure traffic – page views, unique visitors, and hits.
- *Transaction metrics*. If you have an e-commerce site, you need to know how much you are selling, so you can compare it with your sales goals. What is your daily/weekly/sales volume? If your website is a means to get people to your physical store, do you know how many customers are actually going to your store because they chanced upon your website? What is your target conversion rate and return on investment?
- *Customer satisfaction*. While it may be hard to quantify customer satisfaction, you need to have some measure to know what your customers actually feel about your website.

5. Have you developed your benchmarks? Benchmarks allow you to get an idea of how everybody else is doing relative to your own performance. By knowing how others are doing, you get a better sense and confidence in the metrics that you see in your own site, and you get a clearer picture of your performance. Benchmarking entails looking at the data and metrics of your competitors, other retailers, and leading sites in your industry. While you may not have the resources to research and get the data, a simple technique will do: make a list of the top sites in your category and write down what they do best; then make a list of the sites at the bottom of the heap and see what they are doing wrong.

6. What will your website do? Given the audience you have identified for your site, the next step is to determine what you will do for this audience. Will you give them information? Will you offer them unique products? Will you offer them low prices? How will your site be a valuable resource or tool for them?

7. How will your website stand above the competition? Chances are, there are already hundreds, if not millions, of other websites offering the same information, product or services. And chances are, they are so far ahead of your site: they dominate the search engines; they have built on customer awareness and have developed brands. People know them!

You need to think how you will differentiate your website from the competition. Why will users go to your site instead of your competitors? Why will they buy from you? How can you make your offerings more

attractive to your users? To survive, you need to think of ways to set your site apart from the rest of the competition. Your site needs to be distinct. Your users need to think that you are unique, a cut above the rest, even irreplaceable. Below are some techniques you can use to differentiate your website:

- develop a distinct look for your site
- think of more creative advertising techniques
- provide extraordinary service
- offer irresistible product bundling and packaging
- ensure a smooth delivery systems
- institute programs that reward customer's loyalty

Step 3: Set-Up Implementation Plans

1. What name will you give to your site? The most successful websites have the most recognisable names. They have become brands; and people remember them instantly at the top of their heads.

The domain name of your site is critical to the success of your business: it is what users will remember. If your domain name is more convoluted than a maze, chances are users may not think of your site first and instead go to your competitors. The drawback, though, is that many good domain names have already been taken, so you either need to be extra creative and think of something unique or go for the long names. There are two schools of thought in choosing domain names:

- *Choose a unique name that is easy to remember*. The name "amazon.com" has nothing to do with its business -- a giant online shopping site -- but amazon.com has managed to create a powerful online brand. Same with google.com or ebay.com – businesses that chose catchy, distinct and easy to remember domain names for their businesses. They chose domain names that turned out to be good brand names as well.
- *Choose a name using appropriate keywords*. Keyword names such as "style.com", "business.com," "money.com" and other one-keyword names were highly sought after at the start of the internet frenzy in the 1990s. The thinking then (up until now) is that users are most likely to remember the web site's name if it uses the actual topical keyword. A person looking for information on loans might go to "loans.com" or "eloans.com." As a result, demand for keyword domain name surged. Website owners are currently faced with the fact that most if not all of the single word keywords have already been taken or sell at a very high premium.

Given the scarcity of good keyword domain names, many site owners have resorted to using multiple-word keyword domains (e.g. Keyword1keyword2), or domains that use hyphens (e.g. Keyword1-keyword2-keyword3). Aside from the "keyword equals recall" mindset, advocates of this system think that using keywords in the domain name may positively affect their search engines ranking (in terms of keyword density as the keywords are already found in the domain name itself). However, there are indications that some search engines are dropping hyphenated keywords in their databases; hence the claim regarding the search engine advantage is sketchy at best.

2. How do you envision the design of your website? Website design features both form and function. It is the visual manifestation of your website's objective through the combination of content, layout, usability and navigation. Site design is extremely important: it can either help make or break your site's stated purposes.

- *Decide on a look that matches your overall purpose.* Your site design must reflect your overall purpose. An advertising-based website must consider ad spaces and ad formats that the site will sell in deciding the layout of the site. Will a half page ad be used, or a leader board, or a rectangle? How will the bottom part of the page be utilised?

On the other hand, a product-oriented site may go slow on advertising spaces and instead focus on how the products will be presented well in the design. Do you need space for a featured product? How about up sells and cross-sells?

- *Go for a site design that is pleasing overall.* The site must reflect the image of the business you want to project. Do you want a minimalist look characterised by clean and simple lines? Or do you want to convey a whimsical image using colors and bright images? Do you want to convey the appearance of a big business, where people looking at the site would think that a hundred employees run your site when in reality it is just a one-person operation?
- *Think of the site layout that would effectively convey the site contents*
- *Make it easy for users to navigate the site*
- *Check for usability*

3. How will you create your website? There are two approaches to creating a website: (a) either you do it yourself; or (b) hire somebody (often a web designer) to create the site for you.

If you will create the site yourself, you need to have a working knowledge of html at the very least. Some of the software you can use to create your website include: Microsoft FrontPage, Dreamweaver, Adobe go live, and others. If you have more advanced programming skills, you can create a database-driven site that will run using *asp or php* technologies.

If you have no or little skills in website creation and design, you can outsource the process. Hire a web designer that will fit your budget and able to create the site that you envision.

4. How will you create your content? The first step is to create a content plan, which will outline the various types of content that you will need, sources of content, frequency of updates, person/s responsible for content as well as budget for content acquisition (if any).

- *Your website's goal will determine the nature of your content.* If you intend your website to be an extension of your current offline business operation and not as a way to create new revenue streams or develop new types of business partnerships, then your content plan should aim to keep things simple and informative.
- *Your content requirements will depend on the type and nature of your website.* An e-commerce site will need item pictures, product description, and sales copy. On the item pictures, you will need to decide you will do this internally or hire an outside photographer; if internally, whether you have the skills, equipment and talent to take good quality pictures and edit them in a photo-editing software; or if outsourced, how much are you willing to pay the photographer and whether you will have the budget for it.

For a content site like an online publication, you will need to decide on the number of articles, stories or news reports that you want in a day. There is also the standard content for every website that you also need to prepare – privacy policy, terms of use, about us pages.

- *How do you intend to create your content?* You can either choose to manage and create your content manually or automatically. There are a number of content management applications that you can use to make content management a breeze, particularly if you have hundreds or even thousands of

pages. You can change the headers quickly, without going through each of the pages and changing the headers for each page.

- *How many people will be involved in creating the content?* Your content management system should be equipped to handle several users, particularly if the users are in different locations.

5. How will you maintain your website? At the onset, it is important to think about the site creation and maintenance process. Once your website is live:

- who will be responsible for adding content?
- how will you make corrections or changes in the content, layout or navigation?
- do you have the skills to do it or will you rely on someone else?
- how often will you be adding content?
- how are you going to add elements to the site that you did not originally plan (e.g. discussion forum, shopping carts, etc.).

Step 4: Start the Ball Rolling

1. Do you have a logo? The logo creates a feel, an image, and a brand for your site. The web is a visual medium, and an eye-catching logo is the first impression that you will send out to your visitors. A well-designed logo showcases professionalism and conveys what your site is all about.
You can create your logo using the following approaches:

- design your own logo from scratch using graphics software such as adobe illustrator;
- buy a do-it-yourself software with built-in templates such as the logo creator; or
- hire a graphics designer to professionally create your logo.

2. For e-retailers, do you have the critical components needed to run an e-commerce site? To be able to sell online, accept orders, and process credit card payments, you will need a number of elements in addition to a website:

- *Merchant account.* Bank authorised account that allows you to accept major credit cards, electronic checks, etc. You can get a merchant account from banks or merchant account providers such as card service international. Your business must qualify for merchant account based on the requirements set by the provider.

When applying for a merchant account, watch out for high set-up fees, hidden charges and other unscrupulous fees. Banks often provide the best rates for merchant accounts, but getting an account will depend on

the evaluation of risk made on your business. Banks also consider business plans and personal credit history.

- *Payment transaction software*. Software that actually processes customer order information, address, credit card number, etc in real time. The data is sent to a credit card authorisation network that verifies that the credit card is valid and verifies that the shipping address matches the billing address. The common fees that you will pay include setup fee, monthly fee, and per transaction fees.

However, if you decide to process your orders offline or manually, you will not need payment transaction software. Instead, you can enter the credit card information into your merchant-account provided card terminals.

- *Secure server connection (https://)*. Link to a special computer that encrypts confidential ordering data for customer protection. You know you are on a secure server when the URL in your browser says "https://". The "s" stands for "secure." if ordering information is not sent via a secure server it can be intercepted by computer hackers.
- *Shopping cart*. Software which allows you to accept product orders for multiple products from your website. This software automatically calculates and totals orders for your customers. Some setup must be done in the html code of your website, and the shopping cart software must be installed on the server which hosts your site or on the secure server which accepts sensitive ordering information.
- *Fraud detection systems*. With any merchant account, you are responsible for costly fraudulent activities and charge backs from your customers. If a customer complains and request for a chargeback, you will be charged a chargeback fee per transaction, which will leave a black mark on your merchant account record. Many merchant account providers close business accounts with higher than normal chargeback rates.

To avoid penalties associated by chargebacks, you need to implement a number of fraud protection measures. For additional fees, your merchant account or payment gateway will provide fraud detection systems and filters for your sales transactions (e.g. matching phone area code with billing location, matching IP address with billing location, etc.). Some of the most important fraud detection systems today include the address verification system (AVS), card verification value (the three-digit number printed in the signature space on the back of most credit cards such as visa, MasterCard, and discover cards and four-digit number on

the front of American express cards), verified by visa® and MasterCard® secure code programs.
If you are not able to get your own merchant account, you can apply to get an account at one-stop credit card processing center. Note that fees from these services are traditionally higher than merchant accounts.

3. How are you going to host your site? To publish your site on the internet, your website needs to be loaded to a web server. This process is called website hosting. There are two approaches to hosting your website:

- *Procure your own server.* If you have the equipment, space and professional grade connection – and willing to pay the price – you can opt to host your website through your own in-house server. This is the best option if you are willing and have the technical capability to act as your own system administrator, have more control in the management of your website, or have content that are not deemed acceptable by hosting services. Note that this option is time consuming, expensive and the responsibility of ensuring that the site is working rests squarely on your shoulder.
- *Pay a web hosting service.* A web host is in the business of providing server space, web services and file maintenance for those who do not have their own web servers. This arrangement allows you to concentrate on your core business and leave the problems associated with web servers e.g. Downtimes, security issues, etc. to the professionals.

Step 5: Create and Launch Your Website

1. Have you loaded your site with your chosen web host provider? When you are ready to publish your website and make it live on the internet, you can upload files from your computer to your web host's server. The process of uploading files can be done in three ways (you can also use ftp to download files from a website to your own computer):

- using a third party file transfer protocol (ftp) application such as ws_ftp pro and cuteftp that you downloaded or purchased online
- Web-development application such as Microsoft FrontPage
- Through the ftp application provided by your web host accessed by logging into the host's web control or administration panel.

2. Are the scripts and application you need for your website functioning well? It is commonplace for web hosting services to provide several scripts to their clients for free from message boards to statistical software.

However, it may be possible that your needs exceed the functionalities of the scripts and applications offered by the web host. Hence, you either procure the license or download for free applications that would support your needs. For third party applications, you will be responsible for ensuring the compatibility of the application with your web host's servers and the installation of the software (your web host will not install it for you). If you lack the skills to install the software, you can either pay the vendor to install the application to your server or hire another person to do the installation. Whether you installed shopping cart software, banner ad management software, discussion board or refer-to-friend scripts, thoroughly test the application to make sure that it is functioning well with no errors.

3. Have you tested your website? Once you have uploaded your files, including your home page, you are ready to test your site in a browser. Simply type your domain name in your browser. If your domain name transfers if not yet complete, you can view your site by typing your temporary URL. When your site displays in the browser window, check your links to be sure that they are all working properly. Also, be sure that your entire image files display, as they should.

Your customers will be using different computers, systems, and screen resolutions to access your website. You need to make sure that your site presents and functions itself well across all systems. Test your website across browsers and computer systems, making sure that it looks good for both PC and MAC systems. Also test your website across different screen resolutions from 800x600 pixels to 1280x1024 pixels screen resolutions.

Step 6: Promote Your Website and Measure its Results

1. Do you have a plan in place to market your website? You cannot create a website and simply expect visitors to come: it just doesn't happen that way. You need to develop strategies how to lure visitors to your site, make them stay and compel them to do the actions you want from them (e.g. Purchase your products, order your services, read your content, recommend your site to others).

Map out a plan as to how you intend to spread the word about your website, identifying strategies to market the site online and offline.

2. Do you regularly review your traffic logs and website performance tracker? A good website performance tracking software will tell you how your website's traffic is performing over time, what are the most viewed pages, where your traffic is

coming from, what keywords the users are typing in the search engines to reach your site, how long users stay in your site, and many more critical information. Be sure that your web-hosting package includes website analytics software; otherwise, scout the market for good software and install it in your site.

3. How are you going to get sites to link to you? Links are an important source of traffic for every web site. Your site can get a share of the recommending site's visitors if they link to you; more so if the linking site attracts a huge traffic number. More importantly, the number and quality of sites linking to your website figures prominently in how search engines rank pages. The logic in its simplest form goes like this: if more sites are linking to you – and these sites are important sites – then you also must be important; hence your site will be rewarded with high ranking in the search engines.

But how are you going to get sites to link to you?

- *Decide if you are going to use software to automate the link exchange process or you are going to do it manually.* Link exchanges software can provide you with a list of complimentary sites, can send out request for links email automatically, and even alert you when the link to your site is up or removed by the other site.
- *If you are doing the process manually, make a list of complimentary (even competitive sites – if they're willing to exchange links) web sites* and evaluate whether they are likely to create a link to your site. Check if the site has any established procedures regarding link exchanges – some sites have add URL form, while others request that all link requests be sent to a particular email address.
- *Decide whether you want to provide reciprocal links* or you would simply ask for their links without necessarily creating a link back to their site but remember that many sites prefer tit-for-tat or a reciprocal link.
- *Review link exchange emails carefully.* Make sure that your email is sent to the right party and hence avoid being labeled as spam and deleted. Check if your email template has been properly filled out with no embarrassing mistakes.
- *Periodically check the sites that have agreed to link to you,* particularly if you have reciprocal links in place. Many sites promise to put up links, but remove them after a period of time. In the end, you may be giving them the advantage of a link without you getting anything in return.

4. Do you know the search engine keywords that you rank well? Do you know how you perform in "must-be-seen" keywords for your web site? How is your site performing for the same keywords across the various (at least the top three – Google, yahoo, MSN) search engines? Are you tracking the shift overtime for your keywords (e.g. you may be number one for Google today but gone from their listings 6 months from now)?
5. If your site is not visible in the search engine results pages for its keywords, what strategies do you intend to do? There are a number of ways to improve your search engine ranking, among them:

- *Do-it-yourself.* Dedicate time and effort to studying what your website needs to rank well. Then compare your site with that of your competitors' who are doing well in the search engines: check their on-page optimization (titles, metatags, keyword density, depth of content, etc.), check their back links (how many and who are linking to them – can you get links from these websites too?), among others. Make changes and experiment with your website to see what tweaking produces the best results.
- *Buy keywords from pay-per-click providers.* If you want to be seen in your keywords but are not showing in the organic (non-paying) search engine results, your option is to buy keywords from the search engines. Google has an adwords program where your ad will be shown alongside the search results pages for the keywords you've chosen (as sponsored links ads on the left side), or in their content network. The price is based on your bid amount multiplied by the number of times your ad was clicked.

Yahoo offers a more complicated program. You pay for every web page (URL) that you submit for inclusion in their search results. You also pay a per click fee every time your listing generates a click. Their program guarantees that their spider will visit your URL at a more regular basis, although Yahoo claims that participating in their program is not a guarantee for getting top results in their search engine. Unlike Google where paid listings are clearly marked, Yahoo mixes their unpaid organic search results with the paid listings.

- *Hire a search engine optimization expert/company*. If you have no time to do search engine optimiSation, there are a number of firms who are willing to do it for you for a price. They will analyse your website, and recommend changes that you can do to improve your ranking. Many Search Engine Optimisation specialists (SEOs) also offer management of keyword bidding process.

Shop carefully, though, and avoid those that promise you number one results for all your keywords in x amount of time. Also, steer clear of SEOs that will recommend "black hat" SEO strategies that may boost your ranking in the short run but can get your site penalized by the search engines in the long run. Never blindly trust any SEO specialist to reconfigure your website without understanding the short and long-term repercussions of the change.

Step 7: Maintain Your Website and Grow Your Web Business

1. Continue to find ways to grow your web business. The web is a goldmine of opportunities if you know how to look for it. The key is to explore ways to diversify revenue streams, and the continuously changing internet always provides new ways to earn money.

- Be open to new revenue opportunities.
- Always be on the lookout for strategic partners.

2. How do you intend to continue your education on web development? The web as a business medium is young and fast changing: what works today may not necessarily hold true tomorrow. Your task is to keep updated with developments on the internet, new applications that can improve your website, and other opportunities that may arise. There are many ways to gain more knowledge of the workings of the web. Some of them include:

- networking online or offline with like-minded groups and individuals
- actively participating in forums/discussion boards, mailing lists and online gathering of other webmasters
- offline networking with other webmasters or industry members;
- reading books, magazines and other publications on the topic.

4.0 CONCLUSION

Having looked at all the steps outlined above, it can be seen that to create and maintain a successful web presence is not an easy venture but it is possible.

SELF -ASSESSMENT EXERCISE

Give a detailed explanation of the steps on how to create and maintain a successful web presence.

5.0 SUMMARY

In this unit, we discussed about the steps on how to create and maintain a successful web presence. You can now answer the questions below hoping that you understood the topics discussed in this unit.

6.0 TUTOR -MARKED ASSIGNMENT

Looking at the steps outline above, list and explain for each step the possible hindrances to achieving them.

7.0 REFERENCES/FURTHER READING

Cameron, D. (1997). *Electronic Commerce: The New Business Platform for the Internet*. Computer Technology Research.

Choi, S., Stahl, D.O & Whinstone, A.B. (1997). *The Economics of Electronic Commerce*. Indianapolis, IN: Macmillan.

Choi, *et al*. (1997). *The Economics of Electronic Commerce*. Macmillan Technical Publications, p. 18.

Coulouris, G., Dollimore J. & Kindberg, T. (2001). *Distributed Systems Concepts and Design*. Harlow: Addison-Wesley.

Cronin, M. J. (2000). *Unchained Value: The New Logic of Digital Business.* U.S.A.: Harvard Business School Press.

Fournier, R. (1998). *A Methodology for Client Server and Web Application Development*. Yourdon Press.

Howcroft, D & Carroll, J. (2000). *A Proposed Methodology for Web Development.* Proceedings of the European Conference on Information Systems, Vienna, pp. 290-297.

Ince, D. (2003). *Developing Internet Applications.* Pearson Education Limited.

Kalakota, R. (1999). *E-Business*. Reading, MA: Addison-Wesley.

Kalakota, R. & Robinson M. (1999) *e-Business, Roadmap for Success.* Reading, MA: Addison-Wesley.

Kalakota, R. & Whinstone A.B. (1997). *Electronic Commerce*. Reading, MA: Addison-Wesley.

Kalakota, R. & Whinston A.B. (1997). *Electronic Commerce: A Manager's Guide*. Addison Wesley Longman, Inc.40

Kalakota, R. & Whinston,A.B.(1996)..*Frontiers of Electronic Commerce*. Addison-Wesley.

Kleindl, B. A. (2003). *Strategic Electronic Marketing: Managing e-business,* Thomson Learning, Mason, USA.

Korper, S. & Ellis J. (2000). *The E-Commerce Book: Building the E-Empire*. Morgan Kaufmann.

Kou, W. (2003). *Payment Technologies for E-Commerce*. Springer.

Lallana, E., Quimbo, R.S. & Zorayda R.B.A.(2000). *E-Primer: An Introduction to E-commerce*. DAI-AGILE, a USAID-Funded Project.

Lamont, D. (2001*). Conquering the Wireless World: The Age of M-commerce.* United Kingdom: Capstone Publishing Inc.

Mann, C., Eckert S. E. & Knight S.C. (2000). *Global Electronic Commerce: A Policy Primer.* Washington DC: Institute for International Economics.

May, P. (2000). *The Business of E-commerce*. Cambridge Press.

McFadyen, T.M. (2008). *e-commerce Best Practices*. McFadyen Solutions.

Plant, R. (2000). *e-commerce Formulation of Strategy.* U.S.A.: Prentice Hall Inc.

Rahman, S. (2000). *Electronic Commerce: Opportunities and Challenges.* IGI Global.

Reynolds, J. (2004). *The Complete E-Commerce book.* CMP.

Rich, J. (2008). *Design & Launch an e-commerce Business in a week.* Entrepreneur Press.

Rockwell, B. (1998). *Using The Internet To Compete in a Global Marketplace*. Wiley & Sons.

Rosen, A. (2000). T*he E-commerce Question and Answer Book: A Survival Guide for Business Managers.* American Management Association.

Schneider, G. (2010). *Electronic Commerce.* Course Technology.

Slawsky, J. H. & Zafar S. (2005). *Developing and Managing a Successful Payment Card*. Ashgate Publishing.

Smith, D. (2001). *The E-business Book: A Step-by-Step Guide to E-commerce and Beyond.* Princeton: Bloomberg Press.

Standing, C. (2000). *Internet Commerce Development.* Artech House Publishers, Boston.

Timmers, P. (2000). *Electronic Commerce-Strategies and Models for Business-to-Business Trading*. John Wiley & Sons,

Treese, G. W. & Stewart, L. C. (1998). *Designing Systems For Internet Commerce.* Addison-Wesley.

Trepper C.H. (2000). *E-Commerce Strategies*. Microsoft Press.

Turban, E., Lee, J., King D. & Chung, H.M. (1999). *Electronic Commerce: A Managerial Perspective.* Prentice Hall.

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MODULE 4 PRODUCT CATALOGUE AND PROCESSING ORDERS

UNIT 1 E-COMMERCE CATALOG DEVELOPMENT

CONTENTS

1.0 INTRODUCTION

Catalogues in e-commerce are used to provide information about products and services offered. The success of your e-commerce website depends heavily on the quality of your product catalog and so is probably the most important consideration when building an e-commerce website. In this unit, we shall discuss the planning and development of catalogues.

2.0 OBJECTIVES

At the end of this unit, you should be able to:

- plan your e-commerce catalog
- list the contents necessary for a good e-commerce catalog
- explain how to develop a good e-commerce catalog.

3.0 MAIN CONTENT

3.1 E-Commerce Catalog Development

The success of your e-commerce website depends heavily on the quality of your product catalog. While this is probably the most important consideration when building an e-commerce website, it is unfortunately, often the area that remains most neglected. Many new e-tailers choose their e-commerce development partner based on price, graphic design capabilities and e-commerce feature sets.

Many e-marketplaces provide information about products and services offered by their supplier members. This is commonly through the use of catalogues. There are various different types of catalogue - some list general product information, while others contain a significant amount of detail. Some are intended to be very informative. Others are used primarily for promotional purposes. The prices published in catalogues tend to be fixed and are often not disclosed to the customer until they register with the e-marketplace. Some e-marketplaces provide a single electronic catalogue containing all the products that are available from all supplier members. Others offer a link to several catalogues, with the option to purchase goods from each catalogue either directly from the central site or from the suppliers' sites.

The attraction to the customer is that e-marketplace catalogues enable them to search an industry sector that has a wide range of products and suppliers from a single, central point. They can make their purchases from a single site in a single transaction. Some e-marketplaces also offer both the buyers and the sellers the opportunity to integrate the order process with their own in-house enterprise resource planning systems. This has the significant advantage of streamlining the overall e-purchasing activity. While price is important when choosing an e-commerce platform, you don’t want to be penny-wise and pound-foolish. You can create a successful e-commerce site on a budget that would serve as a more realistic starting point to give your site the chance for success. A quality graphic design is definitely important and will certainly help improve conversation rates, build brand and give your customers a sense of confidence. However, when it comes to the overall design, it is most important to have a clean, usable, and easy to navigate design rather than trying to impress visitors with a flashy, over-designed website. Think of it as more of a shopping interface that helps your customers find products. E-commerce feature sets can also be a great factor in determining your e-commerce partner but what good are ancillary features such as gift certificates and wish list modules if no one comes to your site anyway? These types of extras are great for expanding sales once you are successful.

Don’t get me wrong; cheap, beautiful, feature-rich websites are a great thing. Just remember that the success of your business is all going to come down to a well-developed product catalog. If you can't hire a company to develop that catalog for you, be prepared to do some work.

3.1.1 Planning Your E-Commerce Catalogue

In scuba diving they say, "plan your dive and dive your plan". The same thing holds true for your online product catalog. Develop an outline for your catalog that includes categories and sub categories (this would be a good time to consult with an SEO - Search Engine Optimisation specialist). It is important to have your category and product names align with phrases that people actually search for. You want to carefully consider your navigation/category structure in this early planning stage to ensure that you are using words that can generate traffic to your site. The keywords in your navigation system are very important for search engine visibility. It is easier to get it right the first time.

Don’t bite off more than you can chew. A big catalog is great. A complete catalog is better. You want to get your site live as soon as possible to start laying claim to your important keyword phrases. Search engine visibility takes time to develop. You are better off having your website go live with 25 products rather than waiting 9-months to develop the content for 200 products. No duplicate content!
Your content needs to be unique. Your category and product descriptions cannot be borrowed from another website, even if the manufacturer says it’s ok to use their content.

Typically, you will have to write your own quality, keyword rich category and product descriptions. If you are competing with several other sites and you are all getting your products (and content) from the same manufacturer, your site will stand out from the pack if you craft unique content.

3.1.2 E-Commerce Content Development

A successful sales person has an in-depth knowledge of the products they sell. Similarly, if you want to sell online you need well-crafted product descriptions, several professional grade photographs for each product, as well as supporting documentation when possible. Brochures, spec sheets, instructions, and user manuals will play a big part in converting sales. An SEO specialist can leverage these content elements to generate relevant search engine traffic. You can expect there will be several other competing websites in your market space.

Cross Selling and Up Selling Features
Popular products, related products, and also purchased, are the names of popular up selling and cross selling feature. The idea is to try and show products to your site visitors that they might be interested in purchasing. If they are looking at a sweater, show them the matching hat, scarf, and gloves. It is worth the effort to understand these feature sets and to take the time to implement them.

Refined Catalog Look
Develop a refined catalog look, it will help convert sales. Large, bold fonts with loud colors don't help. Nor do big ugly clunky buttons.

Search Engine Considerations
It is important for search engine visibility to have keyword rich product categories listed on your homepage. Also consider developing good category short and long descriptions as well as product short and long descriptions.

Hire an SEO firm to research traffic patterns and degrees of competition for relevant search phrases. To capture traffic from search engines, it is extremely important to integrate targeted, highly relevant keywords into your category and product names and descriptions.

To achieve rankings in search engines, be sure to include the following elements in your product catalog:

- Keyword rich category names on the home page
- Category short and long descriptions
- Keyword rich title tags for your category pages
- Keyword rich product names
- Keyword rich title tags on your product pages
- Keyword rich product short descriptions of at least 1-2 sentences

i. Keyword/content rich product long descriptions consisting of several paragraphs of text, bulleted lists of product highlights benefits and support files such as pdf, exe, and ppt

- Multiple quality product images

You can't always be there to answer your customer's questions in order to help sell your products; you must create the best catalog possible as it will help big-time with your search engine rankings and conversation rate.

3.2 Directory Listings

A simpler alternative to the catalogue is a basic directory listing service. E-marketplaces offering this facility list suppliers under the appropriate product or service category and include a link to each supplier website.

The customer can follow this link in order to access further information about the individual suppliers and the products or services that they offer. If your company website is listed on a directory, make sure it is in the most relevant industry sector so customers can find you easily. This can also help improve your website's search engine rankings.

SELF -ASSESSMENT EXERCISE

Explain the e-commerce catalogue development.

4.0 CONCLUSION

The success of your e-commerce website depends heavily on the quality of your product catalog. While this is probably the most important consideration when building an e-commerce website, it is unfortunately, often the area that remains most neglected.

5.0 SUMMARY

In this unit, we discussed about the planning and development of e-commerce catalogue, content development and directory listings. You can now answer the questions below hoping that you understood the topics discussed in this unit.

6.0 TUTOR-MARKED ASSIGNMENT

i. List and explain the various ways of providing information about products and services offered in a website aside from the ones discussed above.
ii. Write extensively on e-commerce catalogue content development.

7.0 REFERENCES/FURTHER READING

Bonnett, K. (2000). *An IBM Guide to Doing Business on the Internet.* U.S.A.:McGraw-Hill.

Cameron, D. (1997). *Electronic Commerce: The New Business Platform for the Internet*. Computer Technology Research.

Choi, S., Stahl, D.O & Whinstone, A.B. (1997). *The Economics of Electronic Commerce*. Indianapolis, IN: Macmillan.

Choi, *et al*. (1997). *The Economics of Electronic Commerce*. Macmillan Technical Publications, p. 18.

Coulouris, G., Dollimore J. & Kindberg, T. (2001). *Distributed Systems Concepts and Design*. Harlow: Addison-Wesley.

Cronin, M. J. (2000). *Unchained Value: The New Logic of Digital Business.* U.S.A.: Harvard Business School Press.

Fournier, R. (1998). *A Methodology for Client Server and Web Application Development*. Yourdon Press.

Howcroft, D & Carroll, J. (2000). *A Proposed Methodology for Web Development.* Proceedings of the European Conference on Information Systems, Vienna, pp. 290-297.

Ince, D. (2003). *Developing Internet Applications.* Pearson Education Limited.

Kalakota, R. (1999). *E-Business*. Reading, MA: Addison-Wesley.

Kalakota, R. & Robinson M. (1999) *e-Business, Roadmap for Success*. Reading, MA: Addison-Wesley.

Kalakota, R. & Whinstone A.B. (1997). *Electronic Commerce*. Reading, MA: Addison-Wesley.

Kalakota, R. & Whinston A.B. (1997). *Electronic Commerce: A Manager's Guide*. Addison Wesley Longman, Inc.40

Kalakota, R. & Whinston,A.B.(1996)..*Frontiers of Electronic Commerce*. Addison-Wesley.

Kleindl, B. A. (2003). *Strategic Electronic Marketing: Managing e-business,* Thomson Learning, Mason, USA.

Korper, S. & Ellis J. (2000). *The E-Commerce Book: Building the E-Empire*. Morgan Kaufmann.

Kou, W. (2003). *Payment Technologies for E-Commerce*. Springer.

Lallana, E., Quimbo, R.S. & Zorayda R.B.A.(2000). *E-Primer: An Introduction to E-commerce*. DAI-AGILE, a USAID-Funded Project.

Lamont, D. (2001*). Conquering the Wireless World: The Age of M-commerce.* United Kingdom: Capstone Publishing Inc.

Mann, C., Eckert S. E. & Knight S.C. (2000). *Global Electronic Commerce: A Policy Primer.* Washington DC: Institute for International Economics.

May, P. (2000). *The Business of E-commerce*. Cambridge Press.

McFadyen, T.M. (2008). *e-commerce Best Practices*. McFadyen Solutions.

Plant, R. (2000). *e-commerce Formulation of Strategy.* U.S.A.: Prentice Hall Inc.

Rahman, S. (2000). *Electronic Commerce: Opportunities and Challenges.* IGI Global.

Reynolds, J. (2004). *The Complete E-Commerce book.* CMP.

Rich, J. (2008). *Design & Launch an e-commerce Business in a week.* Entrepreneur Press.

Rockwell, B. (1998). *Using The Internet To Compete in a Global Marketplace*. Wiley & Sons.

Rosen, A. (2000). T*he E-commerce Question and Answer Book: A Survival Guide for Business Managers.* American Management Association.

Schneider, G. (2010). *Electronic Commerce.* Course Technology.

Slawsky, J. H. & Zafar S. (2005). *Developing and Managing a Successful Payment Card*. Ashgate Publishing.

Smith, D. (2001). *The E-business Book: A Step-by-Step Guide to E-commerce and Beyond.* Princeton: Bloomberg Press.

Standing, C. (2000). *Internet Commerce Development.* Artech House Publishers, Boston.

Timmers, P. (2000). *Electronic Commerce-Strategies and Models for Business-to-Business Trading*. John Wiley & Sons,

Treese, G. W. & Stewart, L. C. (1998). *Designing Systems For Internet Commerce.* Addison-Wesley.

Trepper C.H. (2000). *E-Commerce Strategies*. Microsoft Press.

Turban, E., Lee, J., King D. & Chung, H.M. (1999). *Electronic Commerce: A Managerial Perspective.* Prentice Hall.

UNIT 2 PROCESSING ORDERS IN E-COMMERCE

CONTENTS

1.0 INTRODUCTION

This unit introduces us to the ways of processing orders in e-commerce websites.

2.0 OBJECTIVES

At the end of this unit, you should be able to:

- process an e-commerce order
- list the different order statuses
- explain the order fulfillment issues.

3.0 MAIN CONTENT

3.1 Order Processing

Order processing is defined as the handling of customer orders within the distribution center. Order processing includes all of the activities related to filling a customer's purchase of your product or service. These orders may be from:

- call centres
- e-commerce websites
- shopping cart systems
- web forms
- email

Order processing is a multi-step process that most often includes:

- capturing and checking the order, prices and terms collecting payment
- producing an invoice
- picking the goods from a warehouse
- packing the goods
- shipping goods to the customer

E-commerce order processing will also utilise:

- secure credit card processing
- electronic data interchange (EDI)
- shipping confirmation files
- secure electronic transaction system

One of the most popular and profitable of all online business models is the e-commerce model of building an online store. Again, one of the most essential components of mastering this sort of business is understanding how to handle and process orders once a buyer has come to your online store and made a purchase. The first two order processing features to check for is the availability of a virtual shopping cart and the ability to transfer data securely. Most e-commerce solutions now come with these features but it's worth checking anyway.

Once you have established your online store and used promotional strategies such as search engine optimisation or pay-per-click marketing to start getting traffic and buyers, most of the orders on your e-commerce site will probably be placed by credit card. For this reason it is important that you know how to process credit card payments. Most e-commerce stores will be using yahoo merchant solutions or similar software, and fortunately these programs make it very easy for you to process credit card payments. The address information is automatically verified to see if it matches the information on file with the credit card, and once it is verified it will go through to your order page in your merchant account, at which point you simply click to confirm the sale.

Although the bulk of orders in an online store will probably be placed online and paid with by a credit card, there are still a lot of shoppers who wish to shop and pay using alternative methods. In order to maximise your sales a web store should therefore be capable of accepting orders and payments in as many ways as possible. Available ordering methods include online, fax, telephone, and snail mail whilst payment methods include credit and debit cards, paper and electronic checks and digital cash. And while smaller merchants will choose to process their credit card payments offline, it is worth checking that the

software is also able to easily handle on line processing. This gives flexibility to cope with future growth.

It is also important to select a solution that automates as much of the order management process as possible, for example the ability to automatically send an e-mail order acknowledgment to the customer along with a unique number for order tracking. Security is another major concern. Although security capability is included with most e-commerce solutions today, some solutions still have major security weaknesses. For example, although they transfer the customer's credit card details from their browser to the merchant's server, they may leave it in an unsecured area of the server where unauthorized parties could access it. Even worse, some send the customers details to the merchant using unencrypted e-mail.

There are some other features that are also worth looking out for. For example, discount clubs allow you to automatically give discounts to repeat or high-volume customers. Online order tracking allows customers to instantly check the status of their orders and eases the demands on your customer service team. And an inventory management facility can automatically remove items from sale once the stock drops below a pre-determined level.

Administration

Ignore all the hype about setting up a web store and then laying back and waiting for the money to roll in. Running a successful online store requires a great deal of effort. However, you can make things easier by choosing a software solution that simplifies the day-to-day running of the store. The first consideration is the method that is used for accessing and administering the store. Some packages require that changes be made offline and then uploaded to the server. This usually limits changes to being made from one specific computer, and this can be a tie. Alternatively, many packages allow stores to be updated online from any internet connected computer.

Next check out how easy it is to add, delete and amend product data as well as how easy it is to run special time-limited price promotions. Try and avoid solutions that require all changes to be made offline and then for the whole database to be re-loaded on to the server. Also look out for any additional marketing tools that might be provided. For example, the maintenance of customer buying history and preferences targeted e-mailing capability, and affiliate program management. These can all prove to be very useful. Finally, and most importantly, examine closely the reports that are provided. There will be no salesperson in your virtual store to monitor customer behaviour and buying patterns – reports are

your only source of information. And so without good reports you will lack data to make fundamental decisions about the effectiveness of your store's design and product offerings.

Some e-commerce software solutions only provide basic analysis of server logs, for example the number of hits and referrer information. This is totally inadequate. Ensure that the solution you choose provides a complete suite of detailed reports, for example a sales history analysis and information about the most common paths that customers are taking through your store.

An important consideration that you can not overlook with this sort of online business is the possibility of fraudulent orders. One way that can help to remedy this sort of situation is to block the IP address from an order that is determined to be fraudulent, since this can ensure that no more orders can come from that location. While this can be a solution for being able to stop repeated fraudulent orders, it is also important to remember that many IP addresses are shared, and so while blocking may help to prevent repeated fraudulent orders; you may end up inadvertently blocking honest customers using the same internet service provider.

Once you have received an order and processed the payment, it is time to ship your product to the customer. The majority of small businesses that are using some sort of integrated e-commerce solution or a yahoo store will have the option to conveniently ship by UPS. This tends to be the easiest way to ship products, and once you have the address type, packaging type, dimensions, and weight, you can print out a shipping label with a tracking number and send your product off to the customer.

3.2 Processing an E-Commerce Order

The process below shows how to process order in a website that deals with books.

Click [**your account**] above the red banner.
Click [**Your Sales**] from the Members Menu.
Outstanding orders will be indicated with a red number in brackets next to the appropriate program, e.g. (4 new orders)
Click [Review and process your orders].
All unprocessed order will be displayed
Locate the order you would like to process and click [**Process**] in the Process/Review column.
Select the appropriate status from the Status column to process the order.
Click [**Book Details**] if you wish to review the book's details.

Click the [Save Order Changes] button.

The buyer receives an automated e-mail confirmation, which tells them whether or not the book(s) is being shipped and provides them with a link so they can track their order and/or submit a question to the bookseller.

Note
When you process orders, you have the choice to send the books using a traceable method. If you choose to use a traceable method, the tracking information must be entered when you process the order. If tracking information is not entered at the order processing stage, and the buyer requests a refund for the reason "Item did not Arrive", our system will assume that the item was not shipped by a traceable method and the buyer will be refunded.

Even though books are automatically removed from your online inventory at the time the order is placed, it is also necessary to set books to "Sold" status in your own inventory system. Orders that are not processed will automatically expire. If you wish to contact the book buyer, use the e-mail address included in the order notification or clicking [**Reply**] in your e-mail program will send a message to the book buyer. If the book buyer's credit card company does not approve the transaction, the order is cancelled. The most common reasons for this are an incorrect expiry date or insufficient funds. You can contact the book buyer to arrange other payment methods. If you mark a book as shipped in error, you are required to initiate a return for the item; use the return reason "incorrectly marked as shipped".

3.3 List of Different Order Statuses

Will ship: Selecting this option indicates that you will ship the book within two business days to the book buyer. Their credit card is charged and the shipping manifest is available to print.

Extra Shipping: Enter the amount you would like to increase the shipping by and the reason. The buyer receives an e-mail message and will be required to accept or reject the charges online. You need to complete processing the order again when you receive an automated notice

Reduce Shipping: Enter the amount you would like to decrease the shipping by and the reason. The charge is adjusted automatically and the buyer's credit card is processed.

Previously sold: If you sold the item previously, either in your store or online, and had not yet removed it from your online inventory, select this status. The buyer receives an e-mail notification of the return. Orders processed as previously sold count against your fulfillment rating.

Rejected: Select this status if you do not intend to ship the item for any other reason (for example, upon locating the item you might realise there was an error, or the item might be on hold in your store for a customer). The buyer is sent an e-mail message stating that the item is unavailable. Orders processed as rejected count against your fulfillment rating.

ISBN Mismatch: Select this status if you notice the ISBN listed for the order does not match the item when you match the ISBN number. If you have inserted the ISBN, this option will not be available. The order will be rejected, and the item is removed from the database. The buyer is sent an e-mail message stating the book is unavailable.

3.4 Order Fulfillment Issues

A large proportion of complaints made by e-commerce customers relate to how their orders were or were not filled. To tackle such problems you need to address various issues.

Product delivery problems
Only promise what you can realistically deliver, especially when demand is high. If you contract out the delivery of products purchased via your e-commerce site to a third-party distribution service, select that service very carefully. Avoid luring customers by offering a product at low cost whilst charging a relatively high delivery rate. This practice rarely works and is more likely to cause problems in customer relations. Ensure your packaging is robust enough to make a safe delivery.

Failing to keep the customer updated on progress
Make a point of confirming orders as soon as possible. Customers are entitled to written confirmation of their order. They can be generated automatically via email and are expected by most customers.
Provide customers with a way to track the progress and availability of their order. Many carriers now send an email confirmation that an order has been dispatched, whilst others use online tracking systems that enable customers to check progress online.

Having an acceptable returns policy
Put in place an acceptable means of handling customer returns and ensure any customer dissatisfaction is professionally resolved.

Consider offering a 100 per cent no-quibble money-back guarantee if customers don't like or want the product.

SELF-ASSESSMENT EXERCISE

Mention 5 order processing issues you have learnt.

4.0 CONCLUSION

Order processing is defined as the handling of customer orders within the distribution center. It includes all of the activities related to filling a customer's purchase of your product or service. It is a multi-step process. When you process orders, you have the choice of using a traceable method. If you choose to use a traceable method, the tracking information must be entered when you process the order. If tracking information is not entered at the order processing stage, and the buyer requests a refund for the reason "Item did not arrive", our system will assume that the item was not shipped by a traceable method and the buyer will be refunded. A large proportion of complaints made by e-commerce customers relate to how their orders were or were not filled. To tackle such problems you need to address various issues such as product delivery problems, failing to keep the customer updated on progress and so on.

5.0 SUMMARY

In this unit, we discussed about processing an e-commerce order, the different order statuses, and order fulfillment issues. Having understood the topics discussed, you may now attempt the questions below

6.0 TUTOR-MARKED ASSIGNMENT

i. List and explain extensively the multi-steps process in order processing.
ii. Describe the different order statuses not mentioned in this unit.
iii. Explain six (6) order processing issues you know.

7.0 REFERENCES/FURTHER READING

Bonnett, K. (2000). *An IBM Guide to Doing Business on the Internet.* U.S.A.:McGraw-Hill.

Cameron, D. (1997). *Electronic Commerce: The New Business Platform for the Internet*. Computer Technology Research.

Choi, S., Stahl, D.O & Whinstone, A.B. (1997). *The Economics of Electronic Commerce*. Indianapolis, IN: Macmillan.

Choi, *et al*. (1997). *The Economics of Electronic Commerce*. Macmillan Technical Publications, p. 18.

Coulouris, G., Dollimore J. & Kindberg, T. (2001). *Distributed Systems Concepts and Design*. Harlow: Addison-Wesley.

Cronin, M. J. (2000). *Unchained Value: The New Logic of Digital Business.* U.S.A.: Harvard Business School Press.

Fournier, R. (1998). *A Methodology for Client Server and Web Application Development*. Yourdon Press.

Howcroft, D & Carroll, J. (2000). *A Proposed Methodology for Web Development.* Proceedings of the European Conference on Information Systems, Vienna, pp. 290-297.

Ince, D. (2003). *Developing Internet Applications.* Pearson Education Limited.

Kalakota, R. (1999). *E-Business*. Reading, MA: Addison-Wesley.

Kalakota, R. & Robinson M. (1999) *e-Business, Roadmap for Success*. Reading, MA: Addison-Wesley.

Kalakota, R. & Whinstone A.B. (1997). *Electronic Commerce*. Reading, MA: Addison-Wesley.

Kalakota, R. & Whinston A.B. (1997). *Electronic Commerce: A Manager's Guide*. Addison Wesley Longman, Inc.40

Kalakota, R. & Whinston,A.B.(1996)..*Frontiers of Electronic Commerce*. Addison-Wesley.

Kleindl, B. A. (2003). *Strategic Electronic Marketing: Managing e-business*, Thomson Learning, Mason, USA.

Korper, S. & Ellis J. (2000). *The E-Commerce Book: Building the E-Empire*. Morgan Kaufmann.

Kou, W. (2003). *Payment Technologies for E-Commerce*. Springer.

Lallana, E., Quimbo, R.S. & Zorayda R.B.A.(2000). *E-Primer: An Introduction to E-commerce*. DAI-AGILE, a USAID-Funded Project.

Lamont, D. (2001*). Conquering the Wireless World: The Age of M-commerce.* United Kingdom: Capstone Publishing Inc.

Mann, C., Eckert S. E. & Knight S.C. (2000). *Global Electronic Commerce: A Policy Primer.* Washington DC: Institute for International Economics.

May, P. (2000). *The Business of E-commerce*. Cambridge Press.

McFadyen, T.M. (2008). *e-commerce Best Practices*. McFadyen Solutions.

Plant, R. (2000). *e-commerce Formulation of Strategy.* U.S.A.: Prentice Hall Inc.

Rahman, S. (2000). *Electronic Commerce: Opportunities and Challenges.* IGI Global.

Reynolds, J. (2004). *The Complete E-Commerce book.* CMP.

Rich, J. (2008). *Design & Launch an e-commerce Business in a week.* Entrepreneur Press.

Rockwell, B. (1998). *Using The Internet To Compete in a Global Marketplace*. Wiley & Sons.

Rosen, A. (2000). T*he E-commerce Question and Answer Book: A Survival Guide for Business Managers.* American Management Association.

Schneider, G. (2010). *Electronic Commerce.* Course Technology.

Slawsky, J. H. & Zafar S. (2005). *Developing and Managing a Successful Payment Card*. Ashgate Publishing.

Smith, D. (2001). *The E-business Book: A Step-by-Step Guide to E-commerce and Beyond.* Princeton: Bloomberg Press.

Standing, C. (2000). *Internet Commerce Development.* Artech House Publishers, Boston.

Timmers, P. (2000). *Electronic Commerce-Strategies and Models for Business-to-Business Trading*. John Wiley & Sons,

Treese, G. W. & Stewart, L. C. (1998). *Designing Systems For Internet Commerce.* Addison-Wesley.

Trepper C.H. (2000). *E-Commerce Strategies*. Microsoft Press.

Turban, E., Lee, J., King D. & Chung, H.M. (1999). *Electronic Commerce: A Managerial Perspective.* Prentice Hall.

UNIT 3 ONLINE SHOP

CONTENTS

1.0 INTRODUCTION

This unit tells us about the advantages of selling online, what you need to consider when creating an online shop and the consequences of getting it wrong. If you choose to work with a third party to build your online shop, this unit will help ensure you ask them the right questions. The unit also explains some legal requirements and the pitfalls that you should be aware of, as well as how to make sure that customers can find your shop on the web.

2.0 OBJECTIVES

At the end of this unit, you should be able to:

- explain the benefits of selling online
- describe a basic online shop
- list the types of online shop
- plan your online shop
- help customers find your website.

3.0 MAIN CONTENT

3.1 Online Shop

Online shopping, is also known as internet shopping, online purchasing, or internet buying. It also includes activities such as online auction. It is

the same as when customers purchase goods or service by exchanging values in physical shops. The internet enables transactions occur through electronic ways by computers. Due to the growing population of internet users, online shopping is popular as an accepted way in which to purchase various types of goods and services.

3.1.1 Benefits of Selling Online

Selling online has a number of advantages over selling by conventional methods. They include:

- Making savings in set-up and operational costs. You don't need to pay shop assistants, rent high street premises, or answer a lot of pre-sales queries.
- Reducing order processing costs: customer orders can automatically come straight into your orders database from the website.

- Reaching a global audience, thereby increasing sales opportunities. Competing with larger businesses by being able to open 24 hours a day, seven days a week.
- Being able to receive payment more quickly from online transactions. Attracting customers who would not normally have investigated your type of high street outlet.
- Improving your offerings using the data gathered by tracking customer purchases.

- Using your online shop as a catalogue for existing customers.

Online selling will work best if you have:

- well-defined products or services that can be sold without human involvement in the sales process
- fixed prices for all types of potential customers
- products or services that can be delivered within a predictable lead time

Many businesses can run pilot e-commerce sites without significant investment. However, creating a fully automated online shop tailored to meet your precise requirements could be expensive. Whatever form of online shop you choose, it's important to take a strategic view. If you launch a website that disappoints your customers or is overwhelmed by traffic, you risk damaging your reputation and losing sales.

3.1.2 A Basic Online Shop

The requirements for building a basic online shop are fairly straightforward. A simple setup allows you to sell a small range of products, providing photos, descriptions and prices as well as accept orders online. The equipment and facilities you will need include a computer, internet access, email, a website and hosting services. Using a broadband connection as opposed to dial-up will ensure fast connection to the internet. However, the 'always-on' connection means you may be susceptible to unauthorised access. Having a firewall will prevent this occurring. A firewall is sometimes included as part of your operating system.

You will also need a hosting package for your shop. There are many e-commerce web-hosting specialists and it's worth shopping around for the best deal. While this service is not necessarily expensive, you tend to get what you pay for. It's important to study the service level agreement and the type of technical support on offer. You should be looking for round-the-clock support. Most customers shopping online will want to pay by debit or credit card. You can create electronic mail-order forms, using one of the various web authoring software packages on the market. These order forms let customers email their orders to be processed offline. If you already have a website, software can add e-commerce functionality. Some companies offer this free, on the condition that they receive a cut of future transactions. A basic site is low cost and easy to create for a limited product range. However, be aware that the design and functionality may be restricted and it may be less secure than other more sophisticated options.

3.1.3 An Intermediate Online Shop

To create an intermediate level online shop you will need an e-commerce package. Facilities vary, but broadly you can expect catalogue management, enhanced order processing and a broader range of design templates. Crucially, you can also expect encryption for secure ordering. Making sure checkout procedures are secure and user friendly are essential if customers are going to feel confident about ordering a product or service. Many people will abandon purchases at the checkout stage if the process is not quick and easy. Using Secure Socket Layer technology to collect card details (denoted by the 'golden padlock' symbol in your browser's status bar) is the key to encouraging online sales. Some e-commerce packages offer a degree of back end systems integration, i.e they connect to your product database and accounts systems, streamlining the order process and keeping the website up to date. If you update your site content regularly, you will encourage customers to come back to you rather than switch to a competitor. If you

use a broadband connection, you can also receive orders in real time and update your website automatically. Be aware that some internet service providers offer combined web hosting and software packages, so it's worth doing some research. An intermediate-level site can provide you with a professional looking design, full e-commerce and payment functionality and value-added features, e.g account information, customer references and customer alerts. However, you should be aware that it may not suit you if you wish to offer more complex products and services.

3.1.4 A Sophisticated Online Shop

A sophisticated online shop offers a huge range of options, including cutting-edge design and functionality, personalised pages and product news. As such, it can provide your customers with a rich, interactive shopping experience.

However, customers should not have to navigate their way past distracting graphics and animations. If they do not find it quick and easy to buy your products and services, they will shop elsewhere. It's important not to ask for personal details too soon- most customers will not be prepared to fill in forms until they are ready to buy.

Having a sophisticated online shop can also make the running of the business smoother. Software can be integrated to trigger order confirmations and automatically dispatch goods and replenish stocks. You should be aware that you may need the help of a design and development company to define your technical requirements and integrate the website with your existing systems. This could take longer to create, lock you into one service provider and be very expensive. Alternatively, you may want to look at free, open source shopping cart software packages. These programs enable you to set up a sophisticated e-commerce website that has a wide range of options, features and support - even if you have only basic computer skills.

Other Types of Online Shops

Online shops could also be of these types:

Online auctions

Online auctions are popular places for trading goods. Individuals registered as users can buy and sale almost anything online. Online auctions companies are, for instances, eBay and Yahoo. The price is normally cheaper than market price; with "past history" functions, users can evaluate sale's honesty and trustworthy before buying; more information is also provided online, or could be answered in Q&A

section. However, some vendors refuse to ship overseas and risks are that vendors are registered but are not official businesses, the credibility is unknown.

Classifieds
It is similar to newspaper classifieds. There are many hard to get or used items with sometimes good discount. On the other hand the traders history is hard to evaluate, the risks is relatively higher.

Portals
It is like a shopping center gathering a number of shopping destinations together in one location, but online however. The benefit is the variety of shops, and the navigation between shops is simplified. The drawback will be the move of site without being told.

3.1.5 Planning Your Online Shop

Before building your website, you must create the right processes and procedures to support it and put in place the resources to deal with orders.

You need to work out how to:

- deliver your products or services to fulfill customer orders collect payments
- maintain security and demonstrate this to the customer
- let customers contact you
- comply with relevant regulations.

You need to ensure that you can deliver goods or services in a reasonable time, ideally the next day. Your business should be ready to deal with calls, emails and queries about delivery - consider whether you need extra staff.

Test your website and processes thoroughly. A soft launch will allow you to test it with perhaps just existing customers - before giving it stronger marketing support. Find delivery methods that keep charges low. Customers may be wary of paying online. However, you can encourage them by providing a secure area on your website for placing orders and giving debit and credit card details. This can prevent late payment problems and helps to safeguard your cash flow.

As well as online payments, you may wish to offer other payment methods to customers, such as invoicing, particularly if you're selling to businesses, or paying by debit or credit card over the telephone. With the use of encryption technology, virus-scanning software and a

'firewall', e-commerce transactions can be as secure as offline ones. It's important to create confidence in your shop. A professional-looking website with an explanation of your security precautions will help.
Consider how to:

- handle debit and credit card details safely
- ensure that key information on your website cannot be defaced or altered fraudulently
- preserve the confidentiality of customer data such as telephone numbers, addresses etc.

Customers will want to know that they can speak to a person if something goes wrong. Your website will therefore need a contacts page including: Your business name, address, phone and fax numbers, an email address for enquiries or orders and the name of the person to contact in the first instance.

3.1.6 Helping Customers Find Your Website

For your online shop to be effective, customers must be able to find it easily. There are a number of things you can do to steer customers towards your website, including improving your website listing in search engine results. Getting your website listed prominently in web directories or through internet advertising. Using social media and online communities to engage with your customers build a community around your brand and help improve online visibility for your product or service. If contributing to social media sites remember to link back to your website when appropriate. Publicising your site through related websites- many individuals go to sites after seeing a link, an advertisement or a mention on another site. Adding your website address to all emails, letterheads and other stationery and to your business vehicles. Mailing or emailing your customers with a newsletter. Getting into local online business directories, such as those produced by local chambers of commerce

When you choose your internet address (URL) or domain name, try to make it simple and easy to remember so that customers will be more likely to go to your site rather than those of your competitors. If you want to build your audience, it is essential that you are listed in web directories and search engines. This can be a time-consuming process but you can get your website listed or improve your search ranking by:

- Thinking about how people are going to find your site - pick key words and make sure they are in your page title and repeated further down the page. Ask friends and family to get involved with this for some objective feedback.

Get other websites to link to your site, many search engines rank sites according to how many other websites link to them. However, there are risks involved with this. Write a description of your site and the services it offers and place it prominently on your home page. Remember that when selling through an online shop, you don't normally have any personal contact with your customers, so you need to try harder to find and keep them. There are further steps you can take to increase the chances of visitors placing an order and to make them feel more secure about buying from your site. These include:

- making your site easy to navigate and user friendly
- giving a 100 per cent no-quibble money-back guarantee if they don't like or want the product
- making sure photographic images on your site are accurate and show products in their best light
- hiring a customer service representative who can give advice on the phone to customers on more complex or expensive products
- making ordering procedures straight forward and quick
- confirming orders immediately by email
- being honest- e.g., telling the customer if you can't deliver on time
- providing a way for customers to track down the progress and availability of their order.

SELF-ASSESSMENT EXERCISE

List 5 other types of online shop you know.

4.0 CONCLUSION

Online shopping, also known as internet shopping, online purchasing, or internet buying, also includes activities such as online auction. Selling online has a number of advantages over selling by conventional methods, including: making savings in set-up and operational costs, reducing order processing costs, reaching a global audience, thereby increasing sales opportunities, competing with larger businesses by being able to open 24 hours a day, seven days a week e.t.c.
Online selling will work best if you have:

- well-defined products or services that can be sold without human involvement in the sales process
- fixed prices for all types of potential customers,
- products or services that can be delivered within a predictable lead time.

The requirements for building a basic online shop are fairly straightforward. A simple setup allows you to sell a small range of products, providing photos, descriptions and prices as well as accept orders online. To create an intermediate level online shop, you will need an e-commerce package. A sophisticated online shop offers a huge range of options, including cutting-edge design and functionality, personalised pages and product news. As such, it can provide your customers with a rich, interactive shopping experience. Online shops could also be of these types: online auctions, classifieds, and portals. Before building your website, you must create the right processes and procedures to support it and put in place the resources to deal with orders. There are a number of things you can do to steer customers towards your website, including: improving your website listing in search engine results, publicising your site through related websites, adding your website address to all emails, letterheads and other stationery and to your business vehicles etc.

5.0 SUMMARY

In this unit, we discussed the benefits of selling online, basic online shop, types of online shop, how to plan your online shop and how to attract customers to your website. Hoping that you understood the topics discussed, you may now attempt the questions below.

6.0 TUTOR-MARKED ASSIGNMENT

i. Write short notes on the following terms
   a. Basic online shop
   b. An intermediate online shop
   c. A sophisticated online shop
ii. List and explain 6 advantages of selling online.

7.0 REFERENCES/FURTHER READING

Bonnett, K. (2000). *An IBM Guide to Doing Business on the Internet.* U.S.A.:McGraw-Hill.

Cameron, D. (1997). *Electronic Commerce: The New Business Platform for the Internet*. Computer Technology Research.

Choi, S., Stahl, D.O & Whinstone, A.B. (1997). *The Economics of Electronic Commerce*. Indianapolis, IN: Macmillan.

Choi, *et al*. (1997). *The Economics of Electronic Commerce*. Macmillan Technical Publications, p. 18.

Coulouris, G., Dollimore J. & Kindberg, T. (2001). *Distributed Systems Concepts and Design*. Harlow: Addison-Wesley.

Cronin, M. J. (2000). *Unchained Value: The New Logic of Digital Business.* U.S.A.: Harvard Business School Press.

Fournier, R. (1998). *A Methodology for Client Server and Web Application Development*. Yourdon Press.

Howcroft, D & Carroll, J. (2000). *A Proposed Methodology for Web Development.* Proceedings of the European Conference on Information Systems, Vienna, pp. 290-297.

Ince, D. (2003). *Developing Internet Applications.* Pearson Education Limited.

Kalakota, R. (1999). *E-Business*. Reading, MA: Addison-Wesley.

Kalakota, R. & Robinson M. (1999). *e-Business, Roadmap for Success*. Reading, MA: Addison-Wesley.

Kalakota, R. & Whinstone A.B. (1997). *Electronic Commerce*. Reading, MA: Addison-Wesley.

Kalakota, R. & Whinston A.B. (1997). *Electronic Commerce: A Manager's Guide*. Addison Wesley Longman, Inc.40

Kalakota, R. & Whinston,A.B.(1996). *Frontiers of Electronic Commerce*. Addison-Wesley.

Kleindl, B. A. (2003). *Strategic Electronic Marketing: Managing e-business,* Thomson Learning, Mason, USA.

Korper, S. & Ellis J. (2000). *The E-Commerce Book: Building the E-Empire*. Morgan Kaufmann.

Kou, W. (2003). *Payment Technologies for E-Commerce*. Springer.

Lallana, E., Quimbo, R.S. & Zorayda R.B.A.(2000). *E-Primer: An Introduction to E-commerce*. DAI-AGILE, a USAID-Funded Project.

Lamont, D. (2001*). Conquering the Wireless World: The Age of M-commerce.* United Kingdom: Capstone Publishing Inc.

Mann, C., Eckert S. E. & Knight S.C. (2000). *Global Electronic Commerce: A Policy Primer.* Washington DC: Institute for International Economics.

May, P. (2000). *The Business of E-commerce*. Cambridge Press.

McFadyen, T.M. (2008). *e-commerce Best Practices*. McFadyen Solutions.

Plant, R. (2000). *e-commerce Formulation of Strategy.* U.S.A.: Prentice Hall Inc.

Rahman, S. (2000). *Electronic Commerce: Opportunities and Challenges.* IGI Global.

Reynolds, J. (2004). *The Complete E-Commerce book.* CMP.

Rich, J. (2008). *Design & Launch an e-commerce Business in a week.* Entrepreneur Press.

Rockwell, B. (1998). *Using The Internet To Compete in a Global Marketplace*. Wiley & Sons.

Rosen, A. (2000). T*he E-commerce Question and Answer Book: A Survival Guide for Business Managers.* American Management Association.

Schneider, G. (2010). *Electronic Commerce.* Course Technology.

Slawsky, J. H. & Zafar S. (2005). *Developing and Managing a Successful Payment Card*. Ashgate Publishing.

Smith, D. (2001). *The E-business Book: A Step-by-Step Guide to E-commerce and Beyond.* Princeton: Bloomberg Press.

Standing, C. (2000). *Internet Commerce Development.* Artech House Publishers, Boston.

Timmers, P. (2000). *Electronic Commerce-Strategies and Models for Business-to-Business Trading*. John Wiley & Sons,

Treese, G. W. & Stewart, L. C. (1998). *Designing Systems For Internet Commerce.* Addison-Wesley.

Trepper C.H. (2000). *E-Commerce Strategies*. Microsoft Press.

Turban, E., Lee, J., King D. & Chung, H.M. (1999). *Electronic Commerce: A Managerial Perspective.* Prentice Hall.

MODULE 5 SHOPPING CART

Unit 1 Introduction to Shopping Cart
Unit 2 Functions of a Shopping Cart
Unit 3 Payment Gateways for Shopping Carts
Unit 4 Shopping Cart Problems

UNIT 1 INTRODUCTION TO SHOPPING CART

CONTENTS

1.0 INTRODUCTION

In this unit, we shall introduce the concept of shopping cart and also mention the different types of shopping cart.

2.0 OBJECTIVES

At the end of this unit, you should be able to:

- introduce the concept-shopping cart
- mention the various types of shopping carts.

3.0 MAIN CONTENT

3.1 Introduction to Shopping Cart

For years now, the term "shopping cart" (or "trolley" or "basket") has been used to identify the software that facilitates an online or e-commerce transaction. The analogy, of course, comes from the shopping cart that you push down the aisle of a store, allowing you to select products for eventual purchase. Shopping cart is the software that facilitates easy selection and payment for products purchased by a customer from an e-commerce website. Once the goods have been

selected, the customer should find the checkout clearly signposted, so that they can proceed to pay for the goods.

The system should process the order speedily and provide you with a summary, including any packing and shipping requirements. It should also generate a printable receipt and allow you to send a confirmation email to the customer.

3.2 Types of Shopping Carts

The types of e-commerce software that are described as "shopping carts" include:

1. Ordering system
2. Store-building system
3. Specialised systems

1. Ordering System Software

At the core of shopping cart software is the ordering system, the functions that make it possible to purchase a product online, product selection, tax calculation, shipping selection and calculation, personal and credit card information entry form, real-time credit card approval (in most cases), and order confirmation. Together they provide the core sales order function.

There are some shopping cart systems that provide only this basic function. Typically, they help you create an order button for each product, which you paste onto the product pages of your website. Then, when customers click on the order button, they are taken to the order system on the vendor's site where the transaction was conducted. When the order is complete, your customer is sent back to your site. Some examples of stand-alone ordering systems are as follows:

- **PayPal Website Payments Standard**

  An excellent payment system and payment gateway, with a simple shopping cart. Does not require a separate merchant credit card account.

- **Americart Shopping Cart Service**

  A flexible ordering system that requires you to have both a merchant account and a payment gateway.

- **ShoppingCart**

  A multi-use tool designed for small businesses that provide a shopping cart, digital delivery system, ad tracking, and an affiliate program. It requires a merchant account and payment gateway.

- **Checkout (2CO)**

  An ordering system for digital products and services for those who have difficulty getting a merchant account. It includes a payment gateway.

- **Google Checkout**

  Allows merchants to sell online without taking credit cards themselves. Google handles the transaction and the payment gateway.

2. Store-Building Software

For sales of only a few products, an order system type of cart can work quite well. But if you have dozens, hundreds, or thousands of products, you'll need a store-building system to manage the complexity.

Store building software combines all the order system functions described above with those of a Content Management System (CMS). Another term for this is online Catalog Management Software. Not only does it handle the products, prices, tax calculation, shipping calculation, etc, it also creates and manages the website and product pages where your customers will shop, not only prices, but the entire look and feel of your store. Pages are based on templates, either standard templates that come with the store or templates specifically designed exclusively for your store.

Any store with hundreds of products will have constant changes in prices, new models of existing products, sales and promotions, coupons, featured products, etc. Store-building software allows you to manage the entire store from a single web interface. Alternatively, store owners can make changes to a product database on their desktop computer, then upload the new database to the online store, which will cause the changes to be reflected online.

With all store-building software, you'll need to select one or more payment systems i.e ways to receive credit cards. Though you can use PayPal, Google Checkout, or 2Checkout, many store owners will get their own merchant credit card accounts and payment gateways.

There are literally hundreds of examples of store-building shopping cart software in the market these days- so many that it's difficult to keep up. Some of the better known examples of this software include the following:

- **ShopSite** produces search-engine-friendly product pages. It comes in three versions: ShopSite Starter, ShopSite Manager, and ShopSite Pro.
- **Yahoo! Merchant Services** is another veteran e-commerce platform with a wide variety of features. But you won't need a payment gateway- it's built in.
- **Miva Merchant** is a third veteran. It is offered by many hosting services and can handle a great many products.
- **osCommerce** is an open source PHP/MySQL e-commerce solution, widely used because it's free and powerful.

3. Specialised E-Commerce Software

We have so far mentioned general purpose online store software. But there are two types of specialised e-commerce software: B2B e-commerce software and membership site software.

B2B Sales: Most off-the-shelf e-commerce software is built for retail sales. But business-to-business sales require a couple of features missing in some shopping carts:

- **Customer accounts**. B2B software provides for an account for each customer with password protected access. The backend will show order history, status of orders, etc. It may even allow for repeat orders based on previous transactions.
- **Customer pricing**. B2B software also allows pricing to be controlled for each customer or pricing tier, depending upon pre-negotiated agreements. Thus, depending upon the customer's status, upon logging in, the pricing shown might reflect 20% off list, 30% off, 40% off, etc.

Several of the better store-building software packages include such features. If you want software written specifically for a B2B environment, however, you'll need to be ready to pay higher prices.

Membership Sites: A second common kind of specialised software is for membership or subscription sites. You might pay for a one-week or one-year membership or anything in-between, which offers access to games, photos, an online community, etc. A good example of this kind of software is AMember, which is written in PHP with a MySQL database.

Hosted vs. Licensed Software

As we conclude our overview of e-commerce software, we need to consider the pros and cons of the two types of software offered: hosted and licensed.

Hosted or "Software as a Service" (SaaS): In this case, the software program and all your store data resides on the software vendor's site. You pay a monthly fee, usually based on how many products you have for sale (or sometimes based on your monthly sales revenue). The big advantage here is that the vendor takes care of all the technical details of hosting and providing security. E-commerce software from the better vendors is constantly being improved and those improvements and new features are automatically available in your software. No uploading of updates and then trying to get things working again is necessary. The advantage to the vendor is a continuous source of revenue that enables the company to upgrade and improve its software.

Licensed Software: The other alternative is to license software that will be installed on a web server that you lease from a hosting service. The big advantages are price and control. You pay a one-time fee to license the software, which will probably include updates for the first year. You will probably pay an annual upgrade fee so you can receive updates as they become available. You have greater control over your online store and may be able to alter the program code to meet particular needs of your business. But along with the control comes responsibility. When problems occur or security holes are identified, you are responsible to make the fixes, upload the updates, and keep it all working. What's more, less revenue to the vendor may prevent the continual programming required for upgrades and fixes.

There is no one best approach here. Both hosted and licensed approaches have advantages and disadvantages.

3.3 Shopping Cart Software

Shopping cart software is an operating system that can be used to allow people to purchase your items, keep track of your accounts, and tie together all of the aspects of your e-commerce site into one cohesive whole. While there are many other types of software that you can use in its place, such as catalog software or a flat order form, shopping cart software is the most popular and the most widely known.

Many Online Transaction Providers will have shopping cart software that comes with their service, but it can often be very expensive, so be warned. If you cannot afford to spend at least a couple of hundred dollars on this software, you should be looking for a package that offers

it as a rental included in the monthly service charge, or one that offers a simple flat order form.

Selecting a Right E-commerce Shopping Cart Software

E-commerce-shopping cart is a series of scripts that keep track of items a visitor picks to buy from your site until they proceed to the "checkout". A popular misconception is that online shopping carts handle the whole financial transaction, but they only really act as a front end which passes sensitive information like the credit card number via a secure connection to a payment gateway.

The payment gateway service then channels the requests and transfers it throughout relevant financial networks and sends back confirmation or denial back to the shopping cart software.There are a number of points that one should consider before selecting a shopping cart:

- The e-commerce shopping cart should be compatible with the payment method. There are dozens of different payment gateways, which plug into various shopping cart packages, so one needs to make sure if the shopping cart that has been selected is compatible with the right payment method.
- One should check out what kinds of payments are supported by the e-commerce shopping cart. In today's virtual world, credit cards have become the most widely accepted method of payment. So one needs to make sure that the shopping cart solution supports credit card payments. It is also essential that the shopping cart, which is selected, accepts payment in multi-currencies, so as to enable the site to serve customers around the globe. The shopping cart must also be able to offer various payment options apart from payment using credit cards to the client like payment by cheque or payment on delivery.
- The shopping cart should also be compatible with the hosting service. The shopping carts are coded in various coding formats like Perl, Asp etc so one must make sure that the cart that one selects is compatible with the hosting service.
- Security is the most essential feature for any e-commerce shopping cart software. A secure shopping cart normally will have a firewall, which safeguards it against any intruders. Apart from this, the shopping cart should also have an excellent connectivity. Excellent connectivity ensures that the transactions carried out are executed efficiently and smoothly.
- A good shopping cart application will have excellent support for backing up files and allowing for export into a variety of formats. This will take care of disaster management.

- Finally and most importantly, one should check out if the shopping cart fits.

SELF- ASSESSMENT EXERCISE

List and explain with good examples the various types of shopping cart.

4.0 CONCLUSION

For years now, the term "shopping cart" (or "trolley" or "basket") has been used to identify the software that facilitates an online or e-commerce transaction. Shopping cart is the software that facilitates easy selection and payment for products purchased by a customer from an e-commerce website. E-commerce-shopping cart is a series of scripts that keep track of items a visitor picks to buy from your site until they proceed to the "checkout". The types of e-commerce software that are described as "shopping carts" include: ordering system, store-building system, and specialised systems.

5.0 SUMMARY

This unit discussed the definition of shopping cart software, types of shopping cart, differences between hosted and licensed software and selecting the right e-commerce shopping cart software. You can now answer the questions below hoping that you understood the topic.

6.0 TUTOR-MARKED ASSIGNMENT

i. Mention 5 similarities and differences between hosted and licensed software.
ii. Name 4 factors to consider when choosing shopping cart software.
iii. Name 3 examples of stand-alone ordering software.

7.0 REFERENCES/FURTHER READING

Bonnett, K. (2000). *An IBM Guide to Doing Business on the Internet.* U.S.A.:McGraw-Hill.

Cameron, D. (1997). *Electronic Commerce: The New Business Platform for the Internet*. Computer Technology Research.

Choi, S., Stahl, D.O & Whinstone, A.B. (1997). *The Economics of Electronic Commerce*. Indianapolis, IN: Macmillan.

Choi, *et al*. (1997). *The Economics of Electronic Commerce*. Macmillan Technical Publications, p. 18.

Coulouris, G., Dollimore J. & Kindberg, T. (2001). *Distributed Systems Concepts and Design*. Harlow: Addison-Wesley.

Cronin, M. J. (2000). *Unchained Value: The New Logic of Digital Business.* U.S.A.: Harvard Business School Press.

Fournier, R. (1998). *A Methodology for Client Server and Web Application Development*. Yourdon Press.

Howcroft, D & Carroll, J. (2000). *A Proposed Methodology for Web Development.* Proceedings of the European Conference on Information Systems, Vienna, pp. 290-297.

Ince, D. (2003). *Developing Internet Applications.* Pearson Education Limited.

Kalakota, R. (1999). *E-Business*. Reading, MA: Addison-Wesley.

Kalakota, R. & Robinson M. (1999) *e-Business, Roadmap for Success*. Reading, MA: Addison-Wesley.

Kalakota, R. & Whinstone A.B. (1997). *Electronic Commerce*. Reading, MA: Addison-Wesley.

Kalakota, R. & Whinston A.B. (1997). *Electronic Commerce: A Manager's Guide*. Addison Wesley Longman, Inc.40

Kalakota, R. & Whinston,A.B.(1996)..*Frontiers of Electronic Commerce*. Addison-Wesley.

Kleindl, B. A. (2003). *Strategic Electronic Marketing: Managing e-business*, Thomson Learning, Mason, USA.

Korper, S. & Ellis J. (2000). *The E-Commerce Book: Building the E-Empire*. Morgan Kaufmann.

Kou, W. (2003). *Payment Technologies for E-Commerce*. Springer.

Lallana, E., Quimbo, R.S. & Zorayda R.B.A.(2000). *E-Primer: An Introduction to E-commerce*. DAI-AGILE, a USAID-Funded Project.

Lamont, D. (2001*). Conquering the Wireless World: The Age of M-commerce.* United Kingdom: Capstone Publishing Inc.

Mann, C., Eckert S. E. & Knight S.C. (2000). *Global Electronic Commerce: A Policy Primer.* Washington DC: Institute for International Economics.

May, P. (2000). *The Business of E-commerce*. Cambridge Press.

McFadyen, T.M. (2008). *e-commerce Best Practices.* McFadyen Solutions.

Plant, R. (2000). *e-commerce Formulation of Strategy.* U.S.A.: Prentice Hall Inc.

Rahman, S. (2000). *Electronic Commerce: Opportunities and Challenges.* IGI Global.

Reynolds, J. (2004). *The Complete E-Commerce book.* CMP.

Rich, J. (2008). *Design & Launch an e-commerce Business in a week.* Entrepreneur Press.

Rockwell, B. (1998). *Using The Internet To Compete in a Global Marketplace*. Wiley & Sons.

Rosen, A. (2000). T*he E-commerce Question and Answer Book: A Survival Guide for Business Managers.* American Management Association.

Schneider, G. (2010). *Electronic Commerce.* Course Technology.

Slawsky, J. H. & Zafar S. (2005). *Developing and Managing a Successful Payment Card*. Ashgate Publishing.

Smith, D. (2001). *The E-business Book: A Step-by-Step Guide to E-commerce and Beyond.* Princeton: Bloomberg Press.

Standing, C. (2000). *Internet Commerce Development.* Artech House Publishers, Boston.

Timmers, P. (2000). *Electronic Commerce-Strategies and Models for Business-to-Business Trading*. John Wiley & Sons,

Treese, G. W. & Stewart, L. C. (1998). *Designing Systems For Internet Commerce.* Addison-Wesley. Trepper C.H. (2000). *E-Commerce Strategies*. Microsoft Press.

Turban, E., Lee, J., King D. & Chung, H.M. (1999). *Electronic Commerce: A Managerial Perspective.* Prentice Hall.

www.businesslink.gov.uk

www.answers.com

www.forums.asp.net

www.transaction.net

www.w3.org

UNIT 2 FUNCTIONS OF A SHOPPING CART

CONTENTS

1.0 INTRODUCTION

This unit exposes you to the various functions of a shopping cart.

2.0 OBJECTIVES

At the end of this unit, you should be able to:

- list the functions of a shopping cart
- explain extensively the functions of a shopping cart
- identify what makes for a good shopping cart.

3.0 MAIN CONTENT

3.1 Functions of a Shopping Cart

In this unit, we will describe the basic functions of a shopping cart ordering system, whether it is a basic cart or a sophisticated store-building system. Fortunately, most carts have the basic functions pretty well under control. The better carts allow greater flexibility in some areas.

3.1.1 Product and Option Selection

First, you need your customer to be able to select one or more products. This can be as simple as an order button for a single product. But could be much more complex when you have sizes, colours, and quantities to

deal with. For example, let's say you're selling monogrammed dress shirts. You'll have:

- **Single options**. Colour is pretty straight forward: red, purple, green, blue, teal
- **Multiple options**. Things get more complicated when your product has more than one set of options available, such as color plus size. Be aware that a few carts may choke here.
- **Options with price**. With size options for e.g S, M, L, XL, 2XL, 3XL e.t.c often the larger sizes may cost more, so your option feature would need to be able to carry the price of each option. Most, but not all, carts allow this.
- **Customer input**. Your customer might need to indicate which letters should be used for the embroidered monogram. Products that require any kind of customisation will need some field where the customer can indicate specific needs.
- **Quantity**. Some carts allow the customer to indicate on the product page itself the quantity of items needed. Others only allow quantity changes after the product is selected and placed in the cart. If you have products that are commonly bought in quantity, it's easiest for the customer if you allow quantity to be selected on the product page. But it is recommended that you set a default of "1" so that a customer who wants to order a product quickly won't be forced to enter a quantity.
- **Variable dimensions**. If you sell goods with variable dimensions, such as cut cloth or certain building supplies or other specialised features you'll probably require custom programming.

When you are shopping for carts, realise that more basic carts may allow a selection of color, but won't necessarily carry a different SKU for each colour. Because of such option idiosyncrasies, it's best to test a cart carefully before committing fully to it.

3.1.2 Shopping Cart

Once your customer has made a selection, the product will appear in the shopping cart, a kind of intermediate page prior to final checkout. The cart page needs to clearly show what products have been ordered as well as the quantity and a subtotal. A good cart page will allow the shopper to easily remove a product from the cart or change quantity. Poorer carts force the customer to figure out that they must set the quantity to "0" in order to delete a product. Make it easy for your customers to do what they desire. Most carts allow customers to select shipping preferences in the shopping cart, a sometimes awkward step to follow.
Most carts allow two paths from the cart:

- Continue to Shop, or
- Complete Order, Checkout, Finalise Order

You will want a cart that makes it very clear how to complete an order. Too often, the path to checkout isn't clear, causing your customer to become frustrated, lose momentum, and abandon the cart.

3.1.3 Shipping Calculations

Determining how to charge for shipping is one of the key decisions a merchant needs to make. Most stores allow only a single type of shipping for the entire store, so your decision must fit all your products. The only exception to this is that many carts allow you to add a flat handling charge on a product by product basis to provide for special shipping requirements.

Your store-wide options are usually these:

Flat Rate Shipping: Useful mainly if most of your products are the same weight and size, such as CDs. With this option, all products have the same shipping price.

Shipping by Sales Total: The idea behind this approach is that, with some types of products, the price is directly related to the cost of shipping.

Shipping by Weight: The most flexible approach is shipping by weight. All carts will allow you to set up a table of weight ranges for each shipping type. Then it will automatically calculate shipping charges based on the total weight of the products in your customer's order. This works quite well with carriers that have a flat rate throughout your delivery area.

Shipping by Weight and Zone: The most basic carts may not have this option. But the better carts facilitate a real-time internet interface with shippers such as UPS, FedEx, and the US postal service. For these to work, however, your customer will need to enter a postal code. Then the shipper's program calculates shipping costs for the weight and zone to be shipped to and will print a shipping label for the product.

The problem is, however, that unless the customer already has an account with your store and is logged in; you need to have the customer enter a postal code before you can give an exact shipping price. This is awkward. Your customer wants to know shipping charges without having to divulge personal information. Asking for too much

information too early forces a greater degree of commitment, this may cause your shopper to balk and abandon the cart. Two options are:

- post clearly on the product page the typical shipping charges, your customer doesn't want any surprises
- ask for the customer's ZIP and tell him the reason you need it.

When you are looking for a shopping cart, take time to work through the steps involved for the customer to determine shipping charges. Some carts offer additional shipping options, such as allowing the merchant to specify the base shipping rate in the product database, rather than having it calculated when the customer places it in the cart.

3.1.4 Tax Calculation

Tax calculation used to be pretty straightforward. But it's getting more complicated. Some carts only allow sales tax calculation by states. The better ones allow you to set up a table to calculate tax by postal code within your state.

Some states require merchants to charge tax based on the county or tax zone of the customer rather than the location of the store, so a merchant might need to charge different sales tax rates depending upon the residence of the customer. The net effect of aggressive moves by states to collect sales taxes on internet sales is that the better shopping cart programs will need to develop more flexible tax calculation methods. If you're a larger merchant, you may find yourself collecting sales tax for many different states. In that case you'll want to select shopping cart software that can use a third-party plug in to calculate the sales tax for a transaction and plug the correct figure into your shopping cart and track all those taxes for you.

3.1.5 E-Mail Confirmation

Another basic function of shopping carts is to send e-mail confirmation to your customer as soon as an order has been completed on your site. The better carts allow you to customise this e-mail to some degree. Carts with order management features may also allow you to send a shipping confirmation e-mail when you ship, though this isn't as common among the shopping carts.

4.0 CONCLUSION

In this unit, we described the basic functions of a shopping cart ordering system, some of which include: product and option selection, e-mail confirmation, shipping calculations and so on.

5.0 SUMMARY

This unit discussed extensively the basic functions of a shopping cart. Hoping that you understood the topics discussed, you may now attempt the question below.

6.0 TUTOR-MARKED ASSIGNMENT

List and explain 4 more functions of a shopping cart ordering system.

7.0 REFERENCES/FURTHER READING

Bonnett, K. (2000). *An IBM Guide to Doing Business on the Internet.* U.S.A.:McGraw-Hill.

Cameron, D. (1997). *Electronic Commerce: The New Business Platform for the Internet*. Computer Technology Research.

Choi, S., Stahl, D.O & Whinstone, A.B. (1997). *The Economics of Electronic Commerce*. Indianapolis, IN: Macmillan.

Choi, *et al*. (1997). *The Economics of Electronic Commerce*. Macmillan Technical Publications, p. 18.

Coulouris, G., Dollimore J. & Kindberg, T. (2001). *Distributed Systems Concepts and Design*. Harlow: Addison-Wesley.

Cronin, M. J. (2000). *Unchained Value: The New Logic of Digital*

Business. U.S.A.: Harvard Business School Press.

Fournier, R. (1998). *A Methodology for Client Server and Web Application Development*. Yourdon Press.

Howcroft, D & Carroll, J. (2000). *A Proposed Methodology for Web Development.* Proceedings of the European Conference on Information Systems, Vienna, pp. 290-297.

Ince, D. (2003). *Developing Internet Applications.* Pearson Education Limited.

Kalakota, R. (1999). *E-Business*. Reading, MA: Addison-Wesley.

Kalakota, R. & Robinson M. (1999) *e-Business, Roadmap for Success*. Reading, MA: Addison-Wesley.

Kalakota, R. & Whinstone A.B. (1997). *Electronic Commerce*. Reading, MA: Addison-Wesley.

Kalakota, R. & Whinston A.B. (1997). *Electronic Commerce: A Manager's Guide.* Addison Wesley Longman, Inc.40

Kalakota, R. & Whinston,A.B.(1996)..*Frontiers of Electronic Commerce*. Addison-Wesley.

Kleindl, B. A. (2003). *Strategic Electronic Marketing: Managing e-business,* Thomson Learning, Mason, USA.

Korper, S. & Ellis J. (2000). *The E-Commerce Book: Building the E-Empire*. Morgan Kaufmann.

Kou, W. (2003). *Payment Technologies for E-Commerce*. Springer.

Lallana, E., Quimbo, R.S. & Zorayda R.B.A.(2000). *E-Primer: An Introduction to E-commerce*. DAI-AGILE, a USAID-Funded Project.

Lamont, D. (2001*). Conquering the Wireless World: The Age of M-commerce.* United Kingdom: Capstone Publishing Inc.

Mann, C., Eckert S. E. & Knight S.C. (2000). *Global Electronic Commerce: A Policy Primer.* Washington DC: Institute for International Economics.

May, P. (2000). *The Business of E-commerce*. Cambridge Press.

McFadyen, T.M. (2008). *e-commerce Best Practices*. McFadyen Solutions.

Plant, R. (2000). *e-commerce Formulation of Strategy.* U.S.A.: Prentice Hall Inc.

Rahman, S. (2000). *Electronic Commerce: Opportunities and Challenges.* IGI Global.

Reynolds, J. (2004). *The Complete E-Commerce book.* CMP.

Rich, J. (2008). *Design & Launch an e-commerce Business in a week.* Entrepreneur Press.

Rockwell, B. (1998). *Using The Internet To Compete in a Global Marketplace*. Wiley & Sons.

Rosen, A. (2000). T*he E-commerce Question and Answer Book: A Survival Guide for Business Managers.* American Management Association.

Schneider, G. (2010). *Electronic Commerce.* Course Technology.

Slawsky, J. H. & Zafar S. (2005). *Developing and Managing a Successful Payment Card*. Ashgate Publishing.

Smith, D. (2001). *The E-business Book: A Step-by-Step Guide to E-commerce and Beyond.* Princeton: Bloomberg Press.

Standing, C. (2000). *Internet Commerce Development.* Artech House Publishers, Boston.

Timmers, P. (2000). *Electronic Commerce-Strategies and Models for Business-to-Business Trading*. John Wiley & Sons,

Treese, G. W. & Stewart, L. C. (1998). *Designing Systems for Internet Commerce.* Addison-Wesley.

Trepper C.H. (2000). *E-Commerce Strategies*. Microsoft Press.

Turban, E., Lee, J., King D. & Chung, H.M. (1999). *Electronic Commerce: A Managerial Perspective.* Prentice Hall.

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UNIT 3 PAYMENT GATEWAYS FOR SHOPPING CARTS

CONTENTS

1.0 INTRODUCTION

This unit summarises the payment gateways for shopping carts.

2.0 OBJECTIVES

At the end of this unit, you should be able to:

- explain the various payment gateways for shopping carts
- discuss how the various gateways function
- decide the best payment gateway to choose for your shopping cart.

3.0 MAIN CONTENT

3.1 Payment Gateways

When someone makes a purchase through your shopping cart, the typical payment transaction process has three steps:

- customer offers credit card information.
- this information is verified in real time
- the transaction is accepted and the customer sees the "thank you for your order" screen.

This unit will explain step 2 of this process i.e. verifying credit card information in real time, which requires the use of what is called a "payment gateway," that is, a secure internet connection to your merchant credit card payment processor.

Manual Entry

Of course, you can set up your shopping cart to allow for manual approval of credit cards. For example, if you have a credit card authorisation system in your brick-and-mortar store, you can take the credit card information from your online store and then check it manually. But this creates several problems:

- entry errors occur often when you manually enter numbers
- efficiency is reduced when you do something manually that can be done automatically
- merchant credit card accounts secured for brick-and-mortar purchases sometimes don't allow internet purchases, which are charged at a different discount rate.

So nearly all online merchants set up away to get credit card approval online in real-time, automatically.

Payment Gateway

As mentioned above, a payment gateway is a secure, internet interface with a payment processor, the company that makes sure that transaction is okay. The payment gateway has two functions:

- to transmit the credit card information securely to the payment processor
- to transmit the approval code and any confirmation details back to your shopping cart program.

Payment Processor

The payment processor is usually a third-party company that is under contract to the merchant's bank to provide authorisation and settlement services for any credit card transactions at the merchant's store.

Typically, when an order is initiated, the credit card information is transmitted to the payment processor. The processor then checks to see if:

- the credit card number, expiration date, and security code information are correct and up-to-date.
- there is sufficient credit available in the purchaser's account.
- the card has not been reported stolen.

Then the processor either authorises the transaction or declines the transaction based on what it finds. For an additional fee, it can check the numbers in address and ZIP code fields to see if they conform to those

on file for the customer's credit card, then report back to the merchant. This is called AVS (Address Verification Service). All this information is transmitted back to your shopping cart within a few seconds using the payment gateway.

At the end of the day, the payment processor will "settle" the funds, that is, withdraw funds from the purchaser's credit card account and deposit funds into the bank account designated by the merchant credit card account contract.

Payment gateways use very secure means of transmitting sensitive information over the internet so long as they are installed properly. Hackers look for low-hanging fruit, not heavily encrypted messages that take massive resources and time to decrypt.

Shopping carts can take only certain payment gateways. Each payment gateway has its own proprietary method of connecting and passing data. Thus it takes special programming and testing to set up a shopping cart for a particular payment gateway. As a result, each shopping cart will offer only a limited number of payment gateway choices for which this programming is built-in. Be sure to check your shopping cart to make sure your preferred payment gateway is available.

Popular Payment Gateways

The availability of payment gateways is determined by your country or region. There's been a great deal of consolidation in this industry over the last few years. Many first generation payment gateways have been purchased either by larger payment gateway companies or by credit card processors themselves.

Reasons to Look Beyond Cost

Why would you spend more? While inexpensive payment gateways will meet the needs of most small online merchants, you may need to spend more in order to get:

- greater programming flexibility for custom ordering system applications
- fraud monitoring risk management systems that cut losses for stores selling products or services with high amounts of credit card fraud.
- specialised payment method availability, such as e-checks, bill later, recurring billing, etc
- high volume pricing
- international payments.

Fraud Detection

Most payment gateways these days currently offer some degree of fraud detection and risk management for an extra fee. Risk management systems often work on a point system, assigning points for such warning signs as:

- suspect customer IP addresses
- high ticket purchases made in the middle of the night
- less than perfect AVS matching (address verification)
- customer computer IP address locations that does not correspond to the shipping address given
- mistakes in entering credit card information
- different shipping address from billing address.

The more points a transaction accumulate, the higher the chance it is fraudulent. According to the rules that you designate, high risk transactions are not approved immediately, but flagged for manual approval.

Built-in Payment Gateways

What we have discussed above are payment gateways that are separate from your merchant credit card account. However, there are payment gateways built into several popular alternate payment methods. Some of these are:

- PayPal Website Payments Standard
- PayPal Express Checkout
- Google Checkout
- Amazon Simple Pay and Checkout By Amazon

Sequence of Decisions

If you are starting an online store from scratch, I recommend the following sequence of decisions:

1. Shopping cart selection. Your most important choice is a shopping cart designed to meet your needs. It shouldn't be an after-thought.
2. Payment gateway selection. Once you've selected shopping cart software, then see what payment gateways are available to you. But don't secure the payment gateway yet.
3. Merchant credit card account selection. Finally, shop for a merchant credit card account that offers good terms and bundles with it, a payment gateway compatible with your shopping cart. Order your payment gateway along with the merchant account.

Your bundled price is typically a full 50% less for the payment gateway that the price advertised on the payment gateway's website.

4.0 CONCLUSION

When someone makes a purchase through your shopping cart, the typical payment transaction process has three steps: Customer offers credit card information. This unit explained step 2 of this process i.e. verifying credit card information in real time, which requires the use of what is called a "payment gateway," that is, a secure internet connection to your merchant credit card payment processor. A payment gateway is a secure, internet interface with a payment processor, the company that makes sure that transaction is okay. The payment gateway has two functions. Payment gateways use very secure means of transmitting sensitive information over the internet so long as they are installed properly. Shopping carts can take only certain payment gateways. Each payment gateway has its own proprietary method of connecting and passing data. Thus, it takes special programming and testing to set up a shopping cart for a particular payment gateway. As a result, each shopping cart will offer only a limited number of payment gateway choices for which this programming is built-in.

5.0 SUMMARY

In this unit, we discussed about payment gateways for shopping carts. You can now answer the questions below hoping that you understood the topic.

6.0 TUTOR-MARKED ASSIGNMENT

i. Write short notes on the remaining two typical payment transaction process when someone makes a purchase through a shopping cart.
ii. Mention and explain in details the two functions of the payment gateway.
iii. Discuss the warning signs in fraud detection in payment gateways.

7.0 REFERENCES/FURTHER READING

Bonnett, K. (2000). *An IBM Guide to Doing Business on the Internet.* U.S.A.:McGraw-Hill.

Cameron, D. (1997). *Electronic Commerce: The New Business Platform for the Internet*. Computer Technology Research.

Choi, S., Stahl, D.O & Whinstone, A.B. (1997). *The Economics of Electronic Commerce*. Indianapolis, IN: Macmillan.

Choi, *et al*. (1997). *The Economics of Electronic Commerce*. Macmillan Technical Publications, p. 18.

Coulouris, G., Dollimore J. & Kindberg, T. (2001). *Distributed Systems Concepts and Design*. Harlow: Addison-Wesley.

Cronin, M. J. (2000). *Unchained Value: The New Logic of Digital Business.* U.S.A.: Harvard Business School Press.

Fournier, R. (1998). *A Methodology for Client Server and Web Application Development*. Yourdon Press.

Howcroft, D & Carroll, J. (2000). *A Proposed Methodology for Web Development.* Proceedings of the European Conference on Information Systems, Vienna, pp. 290-297.

Ince, D. (2003). *Developing Internet Applications.* Pearson Education Limited.

Kalakota, R. (1999). *E-Business*. Reading, MA: Addison-Wesley.

Kalakota, R. & Robinson M. (1999). *e-Business, Roadmap for Success*. Reading, MA: Addison-Wesley.

Kalakota, R. & Whinstone A.B. (1997). *Electronic Commerce*. Reading, MA: Addison-Wesley.

Kalakota, R. & Whinston A.B. (1997). *Electronic Commerce: A Manager's Guide*. Addison Wesley Longman, Inc.40

Kalakota, R. & Whinston, A.B.(1996)..*Frontiers of Electronic Commerce*. Addison-Wesley.

Kleindl, B. A. (2003). *Strategic Electronic Marketing: Managing e-business,* Thomson Learning, Mason, USA.

Korper, S. & Ellis J. (2000). *The E-Commerce Book: Building the E-Empire*. Morgan Kaufmann.

Kou, W. (2003). *Payment Technologies for E-Commerce*. Springer.

Lallana, E., Quimbo, R.S. & Zorayda R.B.A.(2000). *E-Primer: An Introduction to E-commerce*. DAI-AGILE, a USAID-Funded Project.

Lamont, D. (2001*). Conquering the Wireless World: The Age of M-commerce.* United Kingdom: Capstone Publishing Inc.

Mann, C., Eckert S. E. & Knight S.C. (2000). *Global Electronic Commerce: A Policy Primer.* Washington DC: Institute for International Economics.

May, P. (2000). *The Business of E-commerce*. Cambridge Press.

McFadyen, T.M. (2008). *e-commerce Best Practices*. McFadyen Solutions.

Plant, R. (2000). *e-commerce Formulation of Strategy.* U.S.A.: Prentice Hall Inc.

Rahman, S. (2000). *Electronic Commerce: Opportunities and Challenges.* IGI Global.

Reynolds, J. (2004). *The Complete E-Commerce book.* CMP.

Rich, J. (2008). *Design & Launch an e-commerce Business in a week.* Entrepreneur Press.

Rockwell, B. (1998). *Using The Internet To Compete in a Global Marketplace*. Wiley & Sons.

Rosen, A. (2000). T*he E-commerce Question and Answer Book: A Survival Guide for Business Managers.* American Management Association.

Schneider, G. (2010). *Electronic Commerce.* Course Technology.

Slawsky, J. H. & Zafar S. (2005). *Developing and Managing a Successful Payment Card*. Ashgate Publishing.

Smith, D. (2001). *The E-business Book: A Step-by-Step Guide to E-commerce and Beyond.* Princeton: Bloomberg Press.

Standing, C. (2000). *Internet Commerce Development.* Artech House Publishers, Boston.

Timmers, P. (2000). *Electronic Commerce-Strategies and Models for Business-to-Business Trading*. John Wiley & Sons,

Treese, G. W. & Stewart, L. C. (1998). *Designing Systems For Internet Commerce*. Addison-Wesley. Trepper C.H. (2000). *E-Commerce Strategies*. Microsoft Press.

Turban, E., Lee, J., King D. & Chung, H.M. (1999). *Electronic Commerce: A Managerial Perspective*. Prentice Hall.

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UNIT 4 SHOPPING CART PROBLEMS

CONTENTS

1.0 INTRODUCTION

In this unit, we will discuss the problems and solutions of shopping cart.

2.0 OBJECTIVES

At the end of this unit, you should be able to:

- mention the problems of shopping cart
- explain how to avoid such problems.

3.0 MAIN CONTENT

3.1 Shopping Cart Problems

1. Database Server Failure

A database server is software that manages data in a database. It updates, deletes, adds changes, and protects data. Database servers provide both the access control and concurrency control. So while testing a shopping cart, if you find empty catalogs, unpopulated data fields and authentication problems, then you should check the database server. Here are different ways a shopping cart can fail, when the database server goes wrong:

- inability to load or populate data in the product catalog
- inability to load or populate order data in the shopping cart
- inability to load or populate customer profiles
- DB server failure may lead to a complete failure of data retrieval in the system since DB server manages/serves the data in the system

- increase in response time during "browse" transaction. Browse transaction
  generates high frequency, random, sequence of queries on the database server.
- the "shopping cart" transaction fails to update/load the billing details/price in the basket. Shopping cart transaction places medium weight, high frequency read/write operation
- increase in response time to load/update billing details, price lists and total in the basket
- failure or delay to commit the customer order to the database in the "Buy
  transaction"
- user-registration failure, unable to execute read-write process during user
  registration
- search process fails to execute since DB server failure may cause failure of read only search process to fail
- increase in "search" time may indicate performance problems in database server.

2. Error Messages/ Exception Handling

Provided below is a detailed list of errors that you might encounter in an e-commerce site with a shopping cart and it might be useful to test for appropriate error messages. Testers should find this list useful to test a shopping cart site for error handling and check if the error handler handles these common errors. It has also been sub-categorised for ease of use on the basis of the kind of errors the system has been designed to handle.

Quantity error-handling

- Ability to erratically checkout an empty shopping cart and check if error
  message is displayed.
- Ability to add negative numbers to the quantity field. Check for appropriate error handling.
- Accepts decimal entries for quantity but ignores the decimal point and either accepts the first or last digit alone, so 7.0 may be interpreted as 7 or 0 and no error handling exists to prompt or correct the error.
- Accepts decimal entries for quantity but again ignores decimal point and accepts the quantity comprising of both the digits, so 7.0 may be interpreted as 70! And no error message to prompt or correct the error.

- Quantity field not size-constrained and no error message to prompt user of acceptable values or data range.
- An over-sensitive error handler may not let a user increase/decrease/edit the quantity field at an editable stage and may risk rendering the data entry final!

Information error-handling

- Forms requiring registration information, shipping address information, billing address information employ script based entry validation to validate entries but sometimes the scope of the script exceeds its limit and pops an error message for entry fields outside the limit of the script or optional fields.
- Some address fields contain two parts, address 1 and address 2 in order to accommodate lengthy addresses. But some error handlers count both the fields as compulsory and pop error messages to users who leave address 2 empty (because their address is short and fits right into the first one)
- Long addresses may get clipped and no error message or routine exists to warn the user about the size constraint.
- Lack of error routine to check for valid zip code in the address section.
- Check for trigger-happy error messages that sometimes pop up for example: to a non-US shopper's dismay, to validate an empty US zip code.
- Error message pops up informing the user of incomplete information entry but does not highlight the field where error exists.

3. Human Error

Though human judgment and perception is far more superior to any machine, the human tendency to err is always a risk. All shopping cart centric e-commerce systems involve some human action and intervention in the form of data entry, data upgrade, system upgrade, and system design. The chance of human error is equal on both the retailer's side and the user's side. The common human errors in shopping cart are incorrect price entry and erroneous handling of back end processes. Below are some common risks that exist due to human errors

Human error on the retailer side

- Risk of price glitches: incorrect price entry, incorrect data feed, incorrect database configuration and all other forms of incorrect human data entry

- Quantity glitches, incorrect entry of numeric inputs, input in wrong format.
- System time incorrectly set, all time stamps on order placements are out of synchronisation.
- Administrator forgot to restart the web server or shut it down by mistake
- Back-end human error: wrong item sent, or package inter-changed etc
- Shopping cart configured incorrectly
- Administrator erased custom settings by mistake
- System reset to default by mistake
- Security breaches and system security compromises due to deliberate or non- deliberate human action
- Forgot to backup the files
- Corrupted the configuration file by mistake
- Erased data or deleted files by mistake
- Physical failures induced to the shopping cart system and its underlying hardware, due to bad handling, accidental damage caused by human action
- Human error in entering the correct email address when sending confirmation of order placement (in non-automated systems)
- Typographical /grammatical mistakes, and incorrect language structure usage in content pages
- Any large-scale human disaster or man-made disaster that causes physical damage to underlying e-commerce system.
- Transaction aborted due to non intervention of required personnel

Human error on the customer side

- In-correct selections, in-correct navigation, in-correct understanding of the shopping process could be some top-level errors on the shopper's side.
- Adding the wrong quantity, filling up information in the wrong fields, filling up incorrect information, selecting the wrong shipping options, specifying wrong shipping address.
- Entering the wrong data type, entering in the wrong format (e.g Date).
- Deliberate or non- deliberate abortion of the transaction process.
- Loss of shopping cart state and subsequent abandonment of shopping cart due to erroneously closing the browser.
- Entering wrong credit card number or selecting wrong credit card type or entering the expiration date in the wrong format or order.
- In-correct usage of the shopping cart functionality, like pressing the confirmation button multiple times, clicking on selection buttons multiple times causing errors in the order placement.

- Trying to access the shopping cart in an incompatible underlying environment or using an older incompatible version of the browser, or having scripts and cookies disabled.
- Do not have/ has not installed the required plug-ins or media software that is required to view the shopping cart catalog.
- The Billing and Shipping addresses are reversed
- Wrong e-mail address entered

4. Risks due to calculation/computation errors

A shopping cart has various calculations and computations like discount calculations, billing calculations, shipping and handling calculations and tax calculations. Summarised below are some common risks due to calculation and computation errors that cause shopping carts to fail.

Discounts/coupons and special offer calculations

- Coupons in the online world are generally a set of numbers that accord a pre-mentioned discount. Common errors are incorrect sequences of numbers, a mistakenly swapped set of numbers (denoting a different product and different discount)
- Coupons being accepted by the system, after its expiration date.
- An infamous bug has been that of, allowing the same customer to use the coupon multiple times until the total price has been completely discounted.
- Coupon functions OK, but the billing system does not honor the coupon code and continues to charge the full and non-discounted price.
- Coupons with conditions are also error-prone, because sometimes the conditions that make the coupon valid have errors and make the coupon deemable under all conditions
- Some coupon codes that are still under the development stage and not yet been open for public view get “crawled” by search crawlers. And the public gets away with some free shopping
- How a user could not place a discount over a credit voucher she had, because the system could process either a discount or credit but cannot process both together
- Errors in “Quantity available” or “in stock value” displayed in the catalog. This may be due to incorrect computation of inventory stock value. Risk is there will be a delay in shipping the order or the order may never be delivered.
- Check for all discount options. Discount by total percentage may work but discount by total weight may not work.
- Check for issues caused by duplicate items with quantity discounts.

Pre-checkout/check-out calculations

- Some shopping carts show the total only after checkout, but show incorrect and incomplete calculations when checked in the pre-checkout stage.
- Some shopping carts display only the price of the item in the pre-checkout stage but omit all other additional costs like shipping, taxation and tend to show a large cumulative price when user is checking out.
- Hidden costs not shown in the pre-checkout stage
- Multiplication errors when multiplying prices in real numbers with integer quantities and subsequent error in displaying the total price.
- Decimalisation errors in checkout figures
- Errors may occur in currency conversion when more than one type of currency is accepted and also subsequently conversion rate tables may be inaccessible or maybe outdated

Taxation calculations

- Taxes are applied only to the items, but sales tax was applied to shipping costs.
- Even when an order has been placed for multiple copies of the same item, sometimes tax maybe mistakenly applied only to one copy due to the system's internal calculation code.
- When the issue of state taxes is encountered, common problems include wrong application of 'state' factor to the tax calculations, mix-up in estimating taxes for the region of delivery.

Shipping calculations

- Some sites which interface with other sites to calculate 'Shipping costs' skip calculations on shipping when the other site is down and may not provide accurate total costs.
- Again, sites that interface with external sites for accessing their shipping tables, may incorrectly compute shipping costs when large quantities of heavy items are ordered, this error occurs due to the maximum limit on the weight that is available in the cost calculator tables
- International shipping is another error-ridden area, since most international air shipping costs keep changing and also vary with respect to destination, generally the risk remains that the table used for calculation is outdated.
- Most carts calculate on the basis of price threshold, weight threshold, quantity threshold, line item threshold and sometimes

no charge. Risk is high that error may occur due to erroneously using the wrong model for calculation. A single very heavy shipment may then cost very less, if quantity is mistakenly used for the purpose of calculation.

5. Risks due to software upgrade errors

Due to the dynamic nature of their content, web stores and shopping carts undergo frequent updates, upgrades and changes. But these frequent changes tend to frequently break things and cause havoc when the site opens up for business after the upgrade.
Listed below are some of the risks posed by software upgrade in shopping carts and e-commerce systems.

Software upgrade on the server side

- A common error is the failure to backup the web-store before upgrade.
- Accidentally over-writing the product database file during upgrade
- Non-removal of staging files before upgrade may lead to corruption of the shopping cart
- Failure to update or reset correct file permissions in the shopping cart after upgrade process, this causes some pages to show “Unauthorised to view” errors when the user clicks on a catalog page
- Many software upgrade processes look for folders with standard names. For example, CGI based shopping carts look for standard CGI directory path. Any deviations from the standards pose the risk of an incomplete install/upgrade
- Some upgrades corrupt the shopping cart by changing the default file types to newer file types. And this newer file type may not be compatible with clients that use it.
- Files upgraded successfully but did not make changes go “live" after upgrade
- Failure to check the OS compliance of host server before the upgrade
- Failure to verify the host server's software and hardware requirements before upgrade
- Insufficient disk space available for the shopping cart upgrade process and the upgrade stalls before completion
- Failure to update older and outdated content, before an upgrade or site redesign
- Risk of mistakenly listing outdated and discontinued products by overwriting new files with older ones.

- Upgrades performed without checking inter-compatibility between existing or newer software processes within the system.
- Post upgrade "internal glitch" have caused orders from being processed in shopping carts, they generally occur due to new but mismatched data feed installs, convoluted linking due to addition of new links within the shopping cycle. Older links not removed and new links installed without targets.
- Upgrades to some parts of the system, may cause selective failures in dependent or related sections of the system. A common issue has been upgrades to client information databases, causing user authentication failures due to lockouts and denial of access to login processes.
- A "newer look" or "fresh look" after an upgrade may not always mean an error free look for the site. "Newer look" changes the GUI and functionality and this leads to newer problems both in terms of functionality, usability and technical glitches leading to blackouts.
- Another important risk is the risk of security problems that are caused by poor installation and in-complete installation that result in some security features being turned off.
- Software upgrades sometimes sets all options to 'default' automatically after the installation is complete and this in turn may over-write any existing customised options. This leads to change in e-commerce system behavior and settings.

Client side response to server side software upgrade

- Browser incompatible with the new upgraded server side shopping cart.

6. Document Confidentiality

How secure is the e-commerce site? Is it safe to give my credit card number? Can someone get my order details and my personal information? Document confidentiality means protecting private information from being leaked to third parties. Compromises on this issue lead to serious security related failures. This category deals with issues like credit card information leaks, order information leaks, account information leaks, etc.

Shopping carts with advanced features provide direct linking with credit card processing agencies using secure protocols such as SSL or SET (Secure Electronic Transaction). But we need to remember that these secure protocols are also prone to failures and attack by malicious elements and hence can cause sensitive data loss. Cryptography is a key technology that is used for protecting the system against such leaks and

testers testing shopping carts that encrypt data in bill payment transactions need to know some simple ways in which cryptography fails.

- The risk of the cryptography algorithm failing because it contains patterns from the plain text and the algorithm can be guessed.
- The risk of the decryption key being guessed and hence may succumb to attacks such as brute-force attack.
- Risk of using lower bit keys to encrypt data. The lower the number of bits the easier it is to crack the key. 128 bits and higher are considered safe.
- Loss or corruption of a private key
- A key is compromised but failure to replace or remove the compromised key.

Cryptography is a well-published topic and lots of information is available on the web on encryption. It may prove futile for testers to test every aspect of cryptography, due to the complexity of the subject. But a basic idea of the risks associated with violating a few basic rules such as safe key selection or failure to replace corrupted keys will help in validating the security in the transaction stage of the shopping cart. Apart from encrypting the data transfers to protect information, "Document Confidentiality" also involves physically safe guarding files and documents that contain sensitive and confidential information. The risks include:

- risk of exposing directories that hold sensitive files and allowing an external user to access the directory or folders from the web
- risk of setting improper read and writes permissions to these files which any external user can access and modify these important files
- risk of mistakenly configuring the email list server to include sensitive customer information or attach confidential files in public email listings and postings
- script errors that let users edit their URL by changing a few visible parameters like order number and grant them access to other user's records
- poor configuration of shopping carts may cause an attacker to gain entry to classified information
- risk of unfixed bugs or new bugs in databases and server software may open up serious security holes
- check for issues like where the shipping section shows "billing information" in non-secure customer emails
- check for issues, where instead of just the last four digits, all numbers of the credit card are exposed.

7. Risks due to Insufficient Capacity Planning

Capacity planning is the process of measuring a website's ability to serve content to its visitors at an acceptable speed. This is done by measuring the number of visitors the site currently receives and by how much demand each user places on the server and then calculating the computing resources (CPU, RAM, disk space, and network bandwidth) that are necessary to support current and future usage levels". The risks are categorised into three

Risks based on the number of users and usage

- Shopping cart performance degrades due to increase in site users disproportionate to existing capacity.
- No increase in the number of users but increase in the activity of the users, increase in terms of catalog page hits, latency time, increase in usage of search activity, increases in shopping cart update cycles. The increase in such heavy resource consuming activities may upset the capacity planning equation, which maybe based on the number of users and not usage.
- The most common cause that leads to sudden load and causes deficiency in system capacity is the seasonal increases in customers especially the "Holiday shoppers". Test shopping cart for performance and scalability under realistic loads
- Increase in the number of transactions involving third party components like billing cycles,credit card authorisations and account transfers, where the insufficiency in the capacity of the third party systems will indirectly cause the shopping cart and the e-commerce site to stall.
- Resource consumption also depends on the stage of the shopping cycle. For example: The checkout stage uses more pages, more CPU, more DB transaction cycles and more server utilisation than the catalog 'browse' stage. One has to always plan for sufficient capacity and availability for all stages of the shopping cycle keeping in mind the changes in the requirements at each stage.

Risks based on computing infrastructure

- CPU insufficiency may be a big risk if there is an excessive demand placed on CPU by the web server or the database server. Web servers especially tend to consume more CPU cycles than the corresponding database server in the system.
- If the shopping cart spawns a new process every time a user invokes it, and no mechanism exists to limit the maximum number of shoppers, then very soon the processes will choke the available CPU and cause the entire system to slowly crash.

- An operation may cost less in terms of resource consumption, but if the frequency of that operation is high, then very soon we will have a capacity insufficiency risk. Generally, product pages and search pages are moderate in their cost but search page operation is very frequent due to which very soon, it may become the largest resource consumer despite its cost being less.
- Also shopper capacity is determined by the underlying operating systems.
- If any shopping cart operation like basket load or catalog load is memory intensive, then the underlying web server may run into memory deficit very soon.
- If any shopping cart operation forces the web server's page-able process to page to disk, it is bad news and will affect the performance of the web server badly.

Risks based on site content complexity

- Network capacity may become a bottleneck if shopping cart uses high static content like large images and static HTML.
- Poor site design where heavy elements and heavy content pages are called more often than the lighter ones due to which the resource consumption gets unevenly distributed and resource consumption becomes very high. Higher demand should have 'light' content and we can afford to make pages with lesser demand 'heavy'.
- Advertisements retrieved from ad databases, customisations to fit shopper's choice, ActiveX control driven menus and Java based menus are some of the complex site components that potentially affect the capacity of the system and tend to pose a risk to the functioning of the shopping cart.

8. Usability Risks in Shopping Carts

Usability is the measure of the quality of a user's experience when interacting with a product or system whether a website, a software application, mobile technology, or any user-operated device. And hence a general agreement is that a "Usable Web interface is one that is:

- easy to learn
- easy to use
- culturally appropriate
- not discordant with the user's expectations of how the program should operate,
- responsive (fast enough responses that the user doesn't notice waiting for the program to catch up).

Provided below is a list of issues that may seriously hamper the usability of a shopping cart in an e-commerce site. Real life bugs support some of the risks and issues and some others have Do's and Don'ts on how to avoid the risk.

Pop-Ups

- Do not use pop-up window shopping carts because if the user clicks elsewhere in the main window, the pop-up is sent "behind" the main window
- Test shopping carts with pop-up/Ad eliminating software turned ON. Pop-up shopping carts may not work if the pop-up eliminator is ON.
- Check if Pop-up shopping carts have sufficient "real-estate" space when the user adds more items.

Functionality

- Provide "remove item" or "add item" buttons instead of asking the user to change "item quantity number". It is easier and more error free.
- Look for items that have not been linked back to the item/catalog page.
- Check if the "number of items" in the cart is displayed. Users prefer carts that show the current data and state, like how many items are in the cart? What is the total? e.t.c.
- Check if the "Continue Shopping" and "Proceed to Checkout" buttons are visible.

Navigation

- Look for unnecessary steps between item selection and checkout. The more the clicks, the more confusion and the greater the probability that the customer will abandon the transaction.
- Do not link to any external site/page from the shopping cart page. This leads to shoppers getting confused/uninterested which in turn leads to shopping cart abandonment.
- Check if the shopper is able to navigate back to shopping process, after "adding" or "removing" items
- Check if it is possible to add additional items directly from the cart page, instead of going back to browsed pages. This improves functionality and enhances usability.
- If providing detailed information on products to users, then test if you are able to return back to the shopping cart from the detailed

page and also check if the state of the shopping cart is maintained.

Ease of Use

- Check if thumbnail photos of the items can be added to the shopping carts in addition to a text description, this re-assures the customer that the right item has been added to the shopping cart
- Try enhancing the usability by providing an auto-update cart facility after user has added/removed item.
- Check for appropriate positioning of buttons. Place "Continue Shopping" on the left and "Checkout" button the right, users perceive it analogous to "back" and "going forward" respectively
- Presence of standard "credit card" images on the user interface adds trust psychologically on the site's security. Check the shopping cart for images or text that might cause mistrust in the user.
- Check if the user interface provides functionality for discounts and coupons. Provide separate field in the user interface to display discounts due to coupons, it helps user note the discounts better
- Provide separate columns to display "total" bill as the user adds items to the cart
- Too much information to type into the cart - this common problem should be avoided
- Do not limit the features of the shopping cart--keep it flexible
- Cart is too hard to use -reduce functional complexity
- Check if the user has conveyed the information of order placement. Warn the customer when the transaction becomes final; do not surprise them by abruptly billing their contents.
- Check forms against data requirement. Collect only essential information about the user that is absolutely a must for completing the deal, unnecessary questions and making optional questions compulsory makes the user feel bad.
- Check for Hi-Tech whiz creations like flash display of catalog and constantly flashing blue lights in a shopping cart because it may reduce the usability of the cart.
- Check for plug-ins or media files that are not common in any general browser software, and recommend not using them. Expecting users to download software to shop at your site is high handedness! And may cost you heavily in terms of loss of customers to other competitors.
- Provide the user with the functionality to choose the mode of shipment. Check for fixed default radio buttons, non-flexible

shipping options, erratic placement of multiple selection checkboxes

- Not sticking to known paths in navigability and sequence of shopping decreases the usability of the shopping cart. Check for odd sequencing issues like re-sequencing shipping costs after the user has been billed and charged. This will confuse the customer about whether the purchase was executed or not.
- When new functionality is added to the shopping cart, check if it is user understandable otherwise provide help
- Check for odd naming of known metaphors.
- Check if shipping can be calculated before checkout. Shoppers prefer getting an idea of the total cost of the item.

Here are some other techniques that you can employ to avoid shopping cart problems:

Ensure there are no surprises

- Provide details of delivery costs early in the process, so customers are not surprised during final checkout. Consider providing alternative options such as express delivery or in-store collection.
- Show stock availability on the product page, so customers know immediately if a product is in stock.
- Explain the buying process - how long it will take and how many stages there are.

Make it easy to select and amend orders

- Include a link from the shopping cart back to the product page, so customers can easily check they have selected the right item.
- Make it straightforward to change quantities or delete an item from the shopping cart.
- If a product comes in multiple sizes or colours, make it easy for the customer to select or change values in the shopping cart.

Indicate customer progress

- Ensure that the customers always know at exactly what stage they are in the checkout process by including an indicator, for example 'You are in step 3 of 4'.
- Make sure that customers don't get lost by including a prominent 'Next Step' or 'Continue with Checkout' navigation button on each checkout page.

Show clear information

- Keep all information on a single screen on each checkout page, so customers do not have to frequently scroll down.
- Include a box that customers can tick to automatically select the billing address as the delivery address.
- If information is missing or filled out incorrectly, provide a meaningful error message that clearly describes what needs to be corrected.

4.0 CONCLUSION

Some of the shopping cart problems explained in this unit include: error messages/ exception handling, risks due to calculation/computation errors, database server failure, and risks due to software upgrade errors, e.t.c.

5.0 SUMMARY

In this unit, we discussed some of the problems of shopping cart and also proffered some solutions to the problems. Having understood the topics discussed, you may now attempt the question below.

6.0 TUTOR-MARKED ASSIGNMENT

Give 5 more problems of shopping cart not mentioned in this unit with their solutions.

7.0 REFERENCES/FURTHER READING

Bonnett, K. (2000). *An IBM Guide to Doing Business on the Internet.* U.S.A.:McGraw-Hill.

Cameron, D. (1997). *Electronic Commerce: The New Business Platform for the Internet*. Computer Technology Research.

Choi, S., Stahl, D.O & Whinstone, A.B. (1997). *The Economics of Electronic Commerce*. Indianapolis, IN: Macmillan.

Choi, *et al*. (1997). *The Economics of Electronic Commerce*. Macmillan Technical Publications, p. 18.

Coulouris, G., Dollimore J. & Kindberg, T. (2001). *Distributed Systems Concepts and Design*. Harlow: Addison-Wesley.

Cronin, M. J. (2000). *Unchained Value: The New Logic of Digital*

Business. U.S.A.: Harvard Business School Press.

Fournier, R. (1998). *A Methodology for Client Server and Web Application Development*. Yourdon Press.

Howcroft, D & Carroll, J. (2000). *A Proposed Methodology for Web Development.* Proceedings of the European Conference on Information Systems, Vienna, pp. 290-297.

Ince, D. (2003). *Developing Internet Applications.* Pearson Education Limited.

Kalakota, R. (1999). *E-Business*. Reading, MA: Addison-Wesley.

Kalakota, R. & Robinson M. (1999) *e-Business, Roadmap for Success*. Reading, MA: Addison-Wesley.

Kalakota, R. & Whinstone A.B. (1997). *Electronic Commerce*. Reading, MA: Addison-Wesley.

Kalakota, R. & Whinston A.B. (1997). *Electronic Commerce: A Manager's Guide*. Addison Wesley Longman, Inc.40

Kalakota, R. & Whinston,A.B.(1996)..*Frontiers of Electronic Commerce*. Addison-Wesley.

Kleindl, B. A. (2003). *Strategic Electronic Marketing: Managing e-business,* Thomson Learning, Mason, USA.

Korper, S. & Ellis J. (2000). *The E-Commerce Book: Building the E-Empire*. Morgan Kaufmann.

Kou, W. (2003). *Payment Technologies for E-Commerce*. Springer.

Lallana, E., Quimbo, R.S. & Zorayda R.B.A.(2000). *E-Primer: An Introduction to E-commerce*. DAI-AGILE, a USAID-Funded Project.

Lamont, D. (2001*). Conquering the Wireless World: The Age of M-commerce.* United Kingdom: Capstone Publishing Inc.

Mann, C., Eckert S. E. & Knight S.C. (2000). *Global Electronic Commerce: A Policy Primer.* Washington DC: Institute for International Economics.

May, P. (2000). *The Business of E-commerce*. Cambridge Press.

McFadyen, T.M. (2008). *e-commerce Best Practices*. McFadyen Solutions.

Plant, R. (2000). *e-commerce Formulation of Strategy.* U.S.A.: Prentice Hall Inc.

Rahman, S. (2000). *Electronic Commerce: Opportunities and Challenges.* IGI Global.

Reynolds, J. (2004). *The Complete E-Commerce book.* CMP.

Rich, J. (2008). *Design & Launch an e-commerce Business in a week.* Entrepreneur Press.

Rockwell, B. (1998). *Using The Internet To Compete in a Global Marketplace*. Wiley & Sons.

Rosen, A. (2000). T*he E-commerce Question and Answer Book: A Survival Guide for Business Managers.* American Management Association.

Schneider, G. (2010). *Electronic Commerce.* Course Technology.

Slawsky, J. H. & Zafar S. (2005). *Developing and Managing a Successful Payment Card*. Ashgate Publishing.

Smith, D. (2001). *The E-business Book: A Step-by-Step Guide to E-commerce and Beyond.* Princeton: Bloomberg Press.

Standing, C. (2000). *Internet Commerce Development.* Artech House Publishers, Boston.

Timmers, P. (2000). *Electronic Commerce-Strategies and Models for Business-to-Business Trading*. John Wiley & Sons,

Treese, G. W. & Stewart, L. C. (1998). *Designing Systems For Internet Commerce.* Addison-Wesley.

Trepper C.H. (2000). *E-Commerce Strategies*. Microsoft Press.

Turban, E., Lee, J., King D. & Chung, H.M. (1999). *Electronic Commerce: A Managerial Perspective.* Prentice Hall.

www.businesslink.gov.uk

www.answers.com

www.forums.asp.net

www.transaction.net

www.w3.org

MODULE 6 COMPLETING THE PURCHASING PROCESS AND TRACKING SHOPPERS INFORMATION

UNIT 1 COMPLETING THE PURCHASING PROCESS AND TRACKING SHOPPERS INFORMATION I

CONTENTS

1.0 INTRODUCTION

In this unit, we are going to look at completing the purchasing process i.e. the various options for delivering both physical and digital products to your customers and provide guidance on how to ensure that you meet their expectations.

2.0 OBJECTIVES

At the end of this unit, you should be able to:

- explain how to complete the purchasing process
- describe automated order processing
- discuss how to physically deliver goods successfully
- state how digital products are delivered

- discuss digital rights management.

3.0 MAIN CONTENT

3.1 Completing the Purchasing Process

Once a customer purchases a product from your website, you should ensure delivery in a timely and efficient manner. For some items such as music and software, customers can download the product directly to their computer. However, as more businesses look to sell physical products via the web, there is also a need for delivery to the customer's doorstep. The solution is an effective fulfillment service capable of handling all of the stages from processing the order to delivery. For products requiring physical delivery, a large portion of the cost of selling online can be attributed to fulfilling the customer's order. The effectiveness of your fulfillment process can therefore have a major impact on the profitability of your operation. This unit describes the various options for delivering both physical and digital products to your customers and provides guidance on how to ensure that you meet their expectations.

3.1.1 Automated Order Processing

The first stage of the fulfillment cycle is the way in which your business processes a customer's order. How your business handles orders has a major impact on customer service, from encouraging initial interest to prompting repeat business. While several factors - price, quality of product or service, range of goods, stock availability are vital to achieving sales in the first place, a responsive, fully automated order-fulfillment procedure plays a key part in overall customer satisfaction. You need to know exactly how well your business deals with order handling before you can make improvements. You should evaluate how orders are processed by:

1. Identifying the connections between sales, planning, purchasing, etc. Tools such as flow charts and activity diagrams can help you map out your processes and highlight the links. There are simple software tools available to help you do this.
2. Consider linking your systems to those of your customers if you operate in a business-to-business environment. Find out what systems they use and determine if yours are compatible.
3. Asking staff for their input - they may be able to help you identify problems and solutions.
4. Encouraging customers to give you feedback on how their orders were handled.

Automating your internal systems can help achieve the speed and efficiency you need from order processing. It brings together all departments that handle the order, from website or sales representatives to warehouse staff. You can do this by:

i. Considering using enterprise resource planning software which can tie in your website with other facets of your business, such as planning, manufacturing and distribution. Decide whether an off-the-shelf package will be sufficient, or whether it is worth investing in a bespoke system tailored to your particular industry and supply chain. More basic order and stock management software that is cheaper and easier to implement is also available and this might suit some smaller businesses.

ii. Connecting your suppliers and customers to the system. Integrate your system with your website then customer orders that arrive in your system can be transformed into orders to your suppliers. This is for them to benefit from more timely, accurate order information, with invoices sent and processed automatically.

iii. Automating your internal systems may speed up order processing, but remember that some customers may still prefer personal interaction to maintain the customer service experience.

3.1.2 Physical Delivery of Goods

Ensuring that customer orders are delivered quickly and efficiently is integral to any e-commerce service. Delivering what you promised relies on seamless interaction between your business processes and the actual fulfillment service that you use. For those products requiring a physical delivery, the issues associated with conventional logistics need to be addressed alongside the technology needed to manage the process.

Distribution Channels

The distribution channels available for the delivery of these goods include sending the goods directly from:

- your own business to your customer
- a local warehouse to your customer
- national distribution centers to your customers
- digital distribution

For businesses selling small numbers of small items, using the post or couriers is likely to provide a satisfactory solution. However, outsourcing your distribution may also provide your business with an affordable alternative.

Linking Processes and Tracking Goods

Linking processes and tracking orders are important in allowing you to predict delivery times earlier on, so you can keep customers updated on where their goods are and improve your service. This can be achieved through a single, shared database as long as your staff is trained to keep it up-to-date at all stages of the process. If you outsource your delivery requirements, many logistics companies now offer delivery tracking as part of their service, which you can use to advise customers. More sophisticated techniques for doing this include:

1. Enterprise resource planning software, which integrates product planning, parts purchasing, maintaining inventories and tracking orders into one system.
2. Radio frequency identification (RFID), which involves tagging objects so that they can be tracked. RFID tags can be read by equipment that is out of line of sight, at a range of less than 20 feet to 100 feet or more, depending on if they are passive or active tags. While the reading range of passive tags is less, they are considerably less expensive - they also don't use battery power like active tags - and can be disposed off with the product packaging.

Handling Customer Returns

Not all customers will be happy with the quality of products purchased via the internet and there will undoubtedly be a certain percentage of defective or damaged products, irrespective of the quality or type of product being sold. The fulfillment process must therefore include the capability for handling the returns. This should include giving the customer the option to have a replacement item supplied or their money refunded. Agreed procedures should be in place to facilitate either option. It is important that your business records the reasons and frequency with which individuals or companies return goods. If your business runs a customer relationship management system then this is the best place to do it.

Outsourcing the Delivery of Your Goods

If delivery is central to your business then you might want to consider the use of a third-party logistics and distribution service. This will enable you to focus on your core competencies, such as optimising productivity, increasing revenue and controlling costs, while exploiting the third party's logistic expertise. Outsourcing can incorporate not only the delivery of goods but also order handling, stock control and the storage, packing and dispatch of goods. If you run an e-commerce

business outsourcing can also include the development and management of your website, providing complete support to order fulfillment.

Why outsource?

The demand for order-fulfillment solutions is growing with the requirement of e-commerce providers to serve the small-package, individual-oriented needs of their customers. As online sales increase, several factors combine to put new pressures on order-fulfillment systems. These include:

- an expanded selection of products sold online
- the need to move a large volume of small parcels
- rising customer expectation.

Outsourcers have the ability to share warehouse space and resources among other online merchants.

Choose the Right Outsourcing Partner

Businesses find that it is relatively easy to distribute products in bulk through traditional distribution channels such as wholesalers and retailers. However, if you are a smaller web-based business selling a wide range of products that need sending to customers' homes, distribution can be more difficult, particularly if you also have to deal with the associated inventory control and customer support. If you are considering outsourcing your fulfillment services, then you should look for a partner who:

- is dedicated to ensuring that your brand name is properly represented
- understands e-commerce market opportunities and offers reliable back-end technology to support the fulfillment activities
- has experience in inventory management, logistics, information systems and customer service
- is able to move goods effectively and efficiently in order to meet customer needs, both now and as your business grows.

3.1.3 Delivering Digital Products

Using the internet to buy digital goods means that your customers can have the products delivered directly to their computers. Examples of such products include software, music, e-books, reports and training materials. There is a variety of approaches that can be taken for delivering digital products.

1. *Email*

Smaller files such as e-books can be delivered directly to the customer via email, with the customer receiving their book after purchasing the product from the e-commerce site. The advantage of this method is that it is very simple to set up. However, it is time consuming to manually send each product via email and the file can easily be shared with others.

2. Auto responder

Once a customer has confirmed their purchase you can connect the order form to an auto responder, which will send them an automatic email. This will contain a link which they can click to download the digital product. This is obviously a more automated option, though there is the potential for the product to be subsequently copied and distributed by the customer. This issue is addressed by digital rights management software.

3. Download page

It is possible to set up a simple payment system on your site using a payment facility .Once payment has been approved; customers can be automatically directed to a download page where the file can be downloaded, possibly as a compressed zip file.

4. Shopping-cart software

A number of e-commerce providers offer software that delivers downloadable product files and protects against unauthorised digital product downloads. This type of software can be a fully integrated function of the shopping-cart product. After payment is processed, a password and link to download product files is sent to the customer as part of the receipt. You will also need to think about how to protect the copyright of your data and prevent illegal distribution of your digital products.

3.2 Digital Rights Management

Major problems associated with distributing digital products via the internet include protecting the copyright of data and preventing illegal distribution of this data. Both of these issues are addressed by Digital Rights Management (DRM) technologies. In its most common form, Digital Rights Management (DRM) protects intellectual property by either encrypting the data so that it can only be accessed by authorised users, or marking the content with a digital watermark, so that the content can't be freely distributed. Increasingly, DRM also provides

tracking capabilities to identify who is using what content, where and when.

DRM can allow the release of multiple versions of a single document - each group of users is permitted to view only the version appropriate to them. In some contexts, this can be used simply to restrict disclosure on a need-to-know basis. However, where the content is itself a saleable product, it can help create new business. This could be by offering the recipients of a free summary version of a research report the chance to upgrade, for a fee, to the full report. DRM systems can protect against the following threats to your digital rights:

- Render rights cover simple acts such as displaying content on a screen or playing it through an audio system. These are fairly easily protected by relatively simple encryption-based systems allowing only the appropriate users to render the content.
- Transport rights relate to the ability to move or copy the data. Again, this involves simple forms of DRM. However, in this area it can be difficult to balance the rights owner's interests with the user's legitimate expectations, e.g. to make backups.
- Derivative work rights cover the ability of users to modify or extract the content and use it in another way. Here, there will need to be flexible ways of identifying separate parts of the content, tracking the different ways in which they are used and, where necessary, collecting payment for them.

Used creatively, DRM can do much more than protect intellectual property and commercially sensitive material - it can also protect and even enhance revenue.

SELF-ASSESSMENT EXERCISE

Explain the term Digital Right Management.

4.0 CONCLUSION

Once a customer purchases a product from your website, you should ensure delivery in a timely and efficient manner. The solution is an effective fulfillment service capable of handling all of the stages from processing the order to delivery. The first stage of the fulfillment cycle is the way in which your business processes a customer's order. How your business handles orders has a major impact on customer service, from encouraging initial interest to prompting repeat business. You should evaluate how orders are processed by: identifying the connections between sales, planning, and purchasing, Asking staff for their input - they may be able to help you identify problems and

solutions e.t.c. For those products requiring a physical delivery, the issues associated with conventional logistics need to be addressed alongside the technology needed to manage the process. Linking processes and tracking orders are important in allowing you to predict delivery times earlier on, so you can keep customers updated on where their goods are and improve your service.

5.0 SUMMARY

In this unit, we discussed about completing the purchasing process and digital rights management. Hoping that you understood the topics discussed, you may now attempt the questions below.

6.0 TUTOR-MARKED ASSIGNMENT

i. Give 5 reasons why you would outsource the delivery of goods.
ii. Write short notes on the following:
    a. Tracking of goods
    b. Handling customer's returns
    c. Automated order processing
    d. Physical delivery of goods
iii. List and explain the variety of approaches that can be taken for delivering digital products in e-commerce.

7.0 REFERENCES/FURTHER READING

Bonnett, K. (2000). *An IBM Guide to Doing Business on the Internet.* U.S.A.:McGraw-Hill.

Cameron, D. (1997). *Electronic Commerce: The New Business Platform for the Internet*. Computer Technology Research.

Choi, S., Stahl, D.O & Whinstone, A.B. (1997). *The Economics of Electronic Commerce*. Indianapolis, IN: Macmillan.

Choi, *et al*. (1997). *The Economics of Electronic Commerce*. Macmillan Technical Publications, p. 18.

Coulouris, G., Dollimore J. & Kindberg, T. (2001). *Distributed Systems Concepts and Design*. Harlow: Addison-Wesley.

Cronin, M. J. (2000). *Unchained Value: The New Logic of Digital Business.* U.S.A.: Harvard Business School Press.

Fournier, R. (1998). *A Methodology for Client Server and Web Application Development*. Yourdon Press.

Howcroft, D & Carroll, J. (2000). *A Proposed Methodology for Web Development.* Proceedings of the European Conference on Information Systems, Vienna, pp. 290-297.

Ince, D. (2003). *Developing Internet Applications.* Pearson Education Limited.

Kalakota, R. (1999). *E-Business*. Reading, MA: Addison-Wesley.

Kalakota, R. & Robinson M. (1999) *e-Business, Roadmap for Success*. Reading, MA: Addison-Wesley.

Kalakota, R. & Whinstone A.B. (1997). *Electronic Commerce*. Reading, MA: Addison-Wesley.

Kalakota, R. & Whinston A.B. (1997). *Electronic Commerce: A Manager's Guide*. Addison Wesley Longman, Inc.40

Kalakota, R. & Whinston,A.B.(1996)..*Frontiers of Electronic Commerce*. Addison-Wesley.

Kleindl, B. A. (2003). *Strategic Electronic Marketing: Managing e-business,* Thomson Learning, Mason, USA.

Korper, S. & Ellis J. (2000). *The E-Commerce Book: Building the E-Empire*. Morgan Kaufmann.

Kou, W. (2003). *Payment Technologies for E-Commerce*. Springer.

Lallana, E., Quimbo, R.S. & Zorayda R.B.A.(2000). *E-Primer: An Introduction to E-commerce*. DAI-AGILE, a USAID-Funded Project.

Lamont, D. (2001*). Conquering the Wireless World: The Age of M-commerce.* United Kingdom: Capstone Publishing Inc.

Mann, C., Eckert S. E. & Knight S.C. (2000). *Global Electronic Commerce: A Policy Primer.* Washington DC: Institute for International Economics.

May, P. (2000). *The Business of E-commerce*. Cambridge Press.

McFadyen, T.M. (2008). *e-commerce Best Practices*. McFadyen Solutions.

Plant, R. (2000). *e-commerce Formulation of Strategy.* U.S.A.: Prentice Hall Inc.

Rahman, S. (2000). *Electronic Commerce: Opportunities and Challenges.* IGI Global.

Reynolds, J. (2004). *The Complete E-Commerce book*. CMP.

Rich, J. (2008). *Design & Launch an e-commerce Business in a week.* Entrepreneur Press.

Rockwell, B. (1998). *Using The Internet To Compete in a Global Marketplace*. Wiley & Sons.

Rosen, A. (2000). T*he E-commerce Question and Answer Book: A Survival Guide for Business Managers.* American Management Association.

Schneider, G. (2010). *Electronic Commerce.* Course Technology.

Slawsky, J. H. & Zafar S. (2005). *Developing and Managing a Successful Payment Card*. Ashgate Publishing.

Smith, D. (2001). *The E-business Book: A Step-by-Step Guide to E-commerce and Beyond.* Princeton: Bloomberg Press.

Standing, C. (2000). *Internet Commerce Development.* Artech House Publishers, Boston.

Timmers, P. (2000). *Electronic Commerce-Strategies and Models for Business-to-Business Trading*. John Wiley & Sons,

Treese, G. W. & Stewart, L. C. (1998). *Designing Systems For Internet Commerce.* Addison-Wesley.

Trepper C.H. (2000). *E-Commerce Strategies*. Microsoft Press.

Turban, E., Lee, J., King D. & Chung, H.M. (1999). *Electronic Commerce: A Managerial Perspective.* Prentice Hall.

www.businesslink.gov.uk

www.answers.com

www.forums.asp.net

www.transaction.net

www.w3.org

UNIT 2 COMPLETING THE PURCHASING PROCESS AND TRACKING SHOPPERS INFORMATION II

CONTENTS

1.0 INTRODUCTION

This unit discusses the final part of completing the purchasing process and tracking of goods.

2.0 OBJECTIVES

At the end of this unit, you should be able to:

- explain how to meet customers' expectations
- discuss the online payment concepts
- advise on how to select the best online payment options

3.0 MAIN CONTENT

3.1 Meeting Customers' Expectations

Successful fulfillment of a customer's order is about meeting his expectations in terms of delivering the product on time and keeping him informed of any unforeseen delays. Here are some tips to help ensure that your fulfillment process provides a satisfactory conclusion to the whole purchasing cycle:

- Process all orders at a line-item level, so that each individual item ordered is clearly identified. This is particularly important where

a multi-item order is placed and one or two of these items are out of stock.

- Personalise orders so that the customer feels that full account has been taken of their individual needs.
- Track the status of the order so that any customer enquiry can be resolved promptly and efficiently. Formal tracking of progress ensures that any problems arising out of non-delivery of the order are quickly identified and remedied.
- Communicate the order status to the customer to ensure that they are kept fully informed of progress. Many carriers now use email to notify a customer that an order has been dispatched. Others have implemented online tracking systems enabling the customer to log on to their website in order to check progress.
- Turn the order around quickly, preferably within 24 hours. The customer will be keen to have their order delivered as soon as possible, so any delay in actually dispatching it will have a negative impact.
- Consider your packaging not only in terms of ensuring safe delivery, but also in relation to branding on the outside and what you can put inside the package that might increase the likelihood of additional sales, e.g. brochures and special offers.
- Be practical about delivery and ensure that you set realistic customer expectations in terms of the likely delivery date.
- Manage the differing scales of business by ensuring that you have sufficient resources to handle the peaks and troughs of demand.
- Choose the right carrier if you decide to outsource your distribution activity, especially if your product requires special handling.
- Handle returns efficiently and effectively and ensure that any customer dissatisfaction is professionally resolved.

3.2 Accepting Online Payments

For many small businesses, accepting payments online offers major benefits. Customers increasingly expect this facility and it can improve your cash flow significantly. It's easy to accept cheques or invoices for your online sales and to process payments in the traditional way. However, because buyers often use the internet for a speedy service, most sales are paid for with credit and debit cards. To accept cards online, you will have to make special banking arrangements.

Online payments using cards are 'card-not-present' transactions. There are higher risks of fraud with this type of payment and banks require you to operate within a well-defined set of rules and accept a higher level of commercial risk than a conventional swiped card transaction in

a shop. This unit will help you to understand these requirements and assess the options available for taking advantage of online payments.

3.2.1 Online Payment Concepts

Debit and credit card payments and their application online involve some key concepts.

1. *Acquirers*

An acquirer can be a high street bank or other financial institution that offers credit and debit card accepting/processing services. It acquires the money from the customer, processes the transaction and credits your account.

2. Internet Merchant Accounts (IMAs)

You need to apply for a merchant service agreement if you want a bank to handle your electronic payments. For web-based online transactions you need an IMA. Obtaining an IMA from an acquirer may be quicker and easier if you already have 'offline' card-processing facilities set up. In this case, just ask your acquirer for an additional IMA ID for use exclusively with internet transactions. This process is normally quick, especially if the risk to your business does not change. To help protect merchants and cardholders from fraud, the card schemes have developed a service that allows cardholders to authenticate themselves when shopping online. For example: MasterCard's is called MasterCard SecureCode and Visa's is verified by Visa.

3. Payment Service Providers (PSPs)

A PSP will provide you with a 'virtual' till or terminal that collects card details over the internet and passes them to the acquiring bank. To take electronic payments over the web, you will need a PSP. Your choice of PSP will depend on its cost and compatibility with your chosen e-commerce software solution. Usually, the higher your transaction volume the lower the rate you will be charged. Some acquiring banks offer PSP services as part of their product and there are other less expensive options available.

3.2.2 Payment Card Industry Data Security Standard Compliance

The Payment Card Industry Data Security Standard (PCI DSS) is a worldwide security standard developed by the Payment Card Industry (PCI) Security Standards Council to protect cardholder information, such as credit and debit card numbers and cardholders' personal details.

It includes requirements for security management, network architecture, software design, security policies and procedures, and other protection of customer account data. The standard is applicable to any organisation that stores, transmits or processes cardholder information; be they a merchant, third-party processor or acquirer.

PCI DSS is a set of six principles that encompass 12 specific requirements. These requirements are equally applicable to any organisation holding personal information and are intended to reduce the organisation's risk of a data breach..

- Build and maintain a secure network
- Install and maintain a firewall configuration to protect your cardholders' data
- Do not use vendor defaults for system passwords or other security actions
- Protect your cardholder data
- Protect any stored cardholder data
- Encrypt transmission of your cardholders' data across open, public networks
- Keep a vulnerability management plan
- Always use and regularly update your anti-virus software
- Develop and maintain secure systems and applications
- Implement strong access control practices
- Limit access to cardholder data to only those who need to know
- Give every person with computer access a unique ID
- Limit physical access to cardholder data
- Monitor and test your networks on a regular basis
- Track and monitor all access to your network resources and cardholder data
- Regularly test security systems and procedures
- Keep an information security policy
- Always keep a policy that addresses your information security.

The PCI Security Standard Council encourages businesses that store payment data to comply with PCI DSS and become certified to help reduce financial risks from data compromises. However, it is the payment card schemes, e.g. MasterCard or Visa, that manage the actual compliance programme. In practical terms, this means the programme is managed by acquirers and you should check with your bank to seek advice on your specific compliance obligations and how your business can become certified.

Failure to be annually certified can become an issue if you have a security breach and your customers' card details are stolen, in which

case penalties levied by the card schemes and costs can be heavy depending on the number of cards compromised. Even where a merchant is certified this does not protect them from potential penalties if it is deemed that their own actions through negligence, omission or accident contributed to a breach.

3.2.3 Selecting the Best Online Payment Option

You can use the following scenarios to help you choose the best option for your business.

Internet Merchant Account (IMA)

Your business already accepts debit and credit card payments for face-to-face transactions. You expect a fairly high number of online transactions, most of which will be simple and low risk. You need the greatest amount of flexibility in operating your business and cash flow is very important. If this sounds like your business, then you should apply directly for an IMA and discuss your requirements with the acquiring bank.

Payment-Processing Company

Your business will not have a large number of online transactions and you do not currently accept debit or credit card transactions so do not have an IMA. You have not been trading long and cannot provide a well-documented operations history. You value the ability to attract online sales more highly than the ability to collect sales income quickly. Your business will need some flexibility in the way in which it designs and operates its website, so you should consider the facilities that a payment-processing company could offer, with the possibility of moving to a less costly option later.

Setting up an Internet Merchant Account

To accept credit or debit card payments directly online, you'll have to set up an internet merchant account (IMA). There are several banks and processors that currently offer IMAs. These are referred to as merchant acquirers or acquiring banks. Even if you already have a merchant account for face-to-face transactions, you will still need one specifically to accept online payments. Card users will visit your internet shop to order your goods or services and make payments, and the funds will usually be in your bank account after three or four working days.

Beware of Fraud

Online card payments are classed as 'card-not-present' transactions, because you can't physically check the card or the cardholder. If a transaction proves to be fraudulent, the money will be reclaimed from your bank account - this is known as a chargeback. Even if a card-not-present transaction is authorised by the cardholder's bank, this doesn't necessarily guarantee payment. To help guard against fraud, where a cardholder claims that he did not authorise a payment, check to see if your online payment card processor can offer the card scheme's authentication service.

The Costs

Acquiring banks will charge for their services. There may be a sign-up fee and day-to-day charges may be a fixed fee in the case of debit card transactions or a percentage of each transaction for credit cards. In addition, where you are using a payment service provider, they will charge you for their service. If you don't meet the requirements for an IMA, or it's not cost-effective for your business, you could consider using an online payment-processing company or an online shopping mall to handle card payments for you. Once the IMA has been set up, Secure Socket Layer (SSL) technology is used to encrypt transaction data and to send the necessary customer and card details to the acquiring bank in order to authorise the purchase. You should, therefore, ensure that any web-hosting solution you are considering can support the SSL protocol.

Requirements for Applying for an Internet Merchant Account

Banks that offer internet merchant accounts (IMAs) for accepting card payments have strict requirements. When you apply for an IMA, the bank will want to know certain details about you and your business. You will need to:

- outline your business plan including details of your cash flow and how you'll promote your online activities
- supply your website address
- explain the details of your product or service
- give your suppliers' details
- describe how you will deliver your product or service
- set out your terms and conditions for online trading
- work out your expected average online transaction values, your estimated turnover from online sales and your predicted number of credit and debit card transactions
- provide details of the secure server you will use

- make your audited business accounts available
- supply your bank details and provide authority to the bank to carry out a check with credit reference agencies
- detail your trading history
- provide information about the directors or partners in the business - including full contact details.

Using a Payment-Processing Company

Payment-processing companies obtain payment from your customers' credit and debit cards on your behalf and forward the money to you. They offer a useful alternative for businesses who have a smaller turnover from card transactions or who can't open an internet merchant account (IMA) with an acquiring bank. It's a competitive sector and costs vary, so it's worth shopping around.

Advantages

1. Payment-processing companies relieve you of the administrative burden of managing customers' card details and running an IMA.

2. They save you from having to set up secure payment systems.

3. They have less strict application procedures than an IMA requires. For example, you will not usually be required to supply the same level of detailed information about your business plan, trading history and suppliers.

4. Your application can be processed much more quickly than for an IMA.

Disadvantages

1. Customers can see that the payment is not going directly to you even though they may be conducting the transaction through your website.

2. Payment-processing companies may hold payments for a settlement period of 30-60 days before the money reaches your account.

3. Charges are generally higher than for an IMA. However, costs are falling and the market for these services is competitive.

4. If a card is used fraudulently, the value of the transaction will be reclaimed from your business. However, you may be able to get insurance to cover this risk.

SELF-ASSESSMENT EXERCISE

Explain the requirements for applying for an internet merchant account.

4.0 CONCLUSION

Successful fulfillment of a customer's order is about meeting their expectations in terms of delivering the product on time and keeping them informed of any unforeseen delays. For many small businesses, accepting payments online offers major benefits. Customers increasingly expect this facility and it can improve your cash flow significantly. It's easy to accept cheques or invoices for your online sales and to process payments in the traditional way. However, because buyers often use the internet for a speedy service, most sales are paid for with credit and debit cards. To accept cards online, you will have to make special banking arrangements. Debit and credit card payments and their application online involve some key concepts which include: Acquirers, Internet Merchant Accounts, Payment Service Providers e.t.c.

5.0 SUMMARY

In this unit, we learnt about meeting customers' expectations, accepting online payments, discussed online payment concepts and selecting the best online payment option. You can now answer the questions below hoping that you understood the topic discussed in this unit.

6.0 TUTOR-MARKED ASSIGNMENT

i. What are the advantages and disadvantages of using a payment-processing company?
ii. List and explain the processes involved in setting up an internet merchant account.
iii. Explain the following concepts: a) Online Payment Concepts b) Payment Card Industry Data Security Standard Compliance**.**

7.0 REFERENCES/FURTHER READING

Bonnett, K. (2000). *An IBM Guide to Doing Business on the Internet.* U.S.A.:McGraw-Hill.

Cameron, D. (1997). *Electronic Commerce: The New Business Platform for the Internet*. Computer Technology Research.

Choi, S., Stahl, D.O & Whinstone, A.B. (1997). *The Economics of Electronic Commerce*. Indianapolis, IN: Macmillan.

Choi, *et al*. (1997). *The Economics of Electronic Commerce*. Macmillan Technical Publications, p. 18.

Coulouris, G., Dollimore J. & Kindberg, T. (2001). *Distributed Systems Concepts and Design*. Harlow: Addison-Wesley.

Cronin, M. J. (2000). *Unchained Value: The New Logic of Digital Business.* U.S.A.: Harvard Business School Press.

Fournier, R. (1998). *A Methodology for Client Server and Web Application Development*. Yourdon Press.

Howcroft, D & Carroll, J. (2000). *A Proposed Methodology for Web Development.* Proceedings of the European Conference on Information Systems, Vienna, pp. 290-297.

Ince, D. (2003). *Developing Internet Applications.* Pearson Education Limited.

Kalakota, R. (1999). *E-Business*. Reading, MA: Addison-Wesley.

Kalakota, R. & Robinson M. (1999) *e-Business, Roadmap for Success*. Reading, MA: Addison-Wesley.

Kalakota, R. & Whinstone A.B. (1997). *Electronic Commerce*. Reading, MA: Addison-Wesley.

Kalakota, R. & Whinston A.B. (1997). *Electronic Commerce: A Manager's Guide*. Addison Wesley Longman, Inc.40

Kalakota, R. & Whinston,A.B.(1996)..*Frontiers of Electronic Commerce*. Addison-Wesley.

Kleindl, B. A. (2003). *Strategic Electronic Marketing: Managing e-business*, Thomson Learning, Mason, USA.

Korper, S. & Ellis J. (2000). *The E-Commerce Book: Building the E-Empire*. Morgan Kaufmann.

Kou, W. (2003). *Payment Technologies for E-Commerce*. Springer.

Lallana, E., Quimbo, R.S. & Zorayda R.B.A.(2000). *E-Primer: An Introduction to E-commerce*. DAI-AGILE, a USAID-Funded Project.

Lamont, D. (2001*). Conquering the Wireless World: The Age of M-commerce.* United Kingdom: Capstone Publishing Inc.

Mann, C., Eckert S. E. & Knight S.C. (2000). *Global Electronic Commerce: A Policy Primer*. Washington DC: Institute for International Economics.

May, P. (2000). *The Business of E-commerce*. Cambridge Press.

McFadyen, T.M. (2008). *e-commerce Best Practices*. McFadyen Solutions.

Plant, R. (2000). *e-commerce Formulation of Strategy.* U.S.A.: Prentice Hall Inc.

Rahman, S. (2000). *Electronic Commerce: Opportunities and Challenges.* IGI Global.

Reynolds, J. (2004). *The Complete E-Commerce book*. CMP.

Rich, J. (2008). *Design & Launch an e-commerce Business in a week.* Entrepreneur Press.

Rockwell, B. (1998). *Using The Internet To Compete in a Global Marketplace*. Wiley & Sons.

Rosen, A. (2000). T*he E-commerce Question and Answer Book: A Survival Guide for Business Managers.* American Management Association.

Schneider, G. (2010). *Electronic Commerce.* Course Technology.

Slawsky, J. H. & Zafar S. (2005). *Developing and Managing a Successful Payment Card*. Ashgate Publishing.

Smith, D. (2001). *The E-business Book: A Step-by-Step Guide to E-commerce and Beyond.* Princeton: Bloomberg Press.

Standing, C. (2000). *Internet Commerce Development.* Artech House Publishers, Boston.

Timmers, P. (2000). *Electronic Commerce-Strategies and Models for Business-to-Business Trading*. John Wiley & Sons,

Treese, G. W. & Stewart, L. C. (1998). *Designing Systems For Internet Commerce.* Addison-Wesley.

Trepper C.H. (2000). *E-Commerce Strategies*. Microsoft Press.

Turban, E., Lee, J., King D. & Chung, H.M. (1999). *Electronic Commerce: A Managerial Perspective.* Prentice Hall.

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UNIT 3 SECURITY IN E-COMMERCE

CONTENTS

1.0 INTRODUCTION

This unit looks at the security threats posed to e-commerce systems and the damage they can potentially cause to your business. It provides advice on how best to address these threats, by identifying the risks that they pose and implementing the appropriate level of security controls to counter them.

2.0 OBJECTIVES

At the end of this unit, you should be able to:

- explain how to secure your e-commerce systems
- discuss common e-commerce security controls
- explain the risks from viruses, trojans, worms and botnets
- discuss how to preventing problems from viruses, trojans, worms and botnets
- specify other methods of preventing viruses

3.0 MAIN CONTENT

3.1 Securing Your E-Commerce Systems

As the use of the internet continues to grow, websites are assuming greater importance as the public face of business. Furthermore, the revenues generated by e-commerce systems mean that organisations are becoming increasingly reliant on them as core elements of their business.

With this high level of dependency upon the services provided by e-commerce systems, it is essential that they are protected from the threats posed by hackers, viruses, fraud and denial-of-service attacks. Every business should take steps to secure their e-commerce systems, although smaller businesses may choose to work with third-party specialists to implement some of the more sophisticated security controls.

3.1.1 E-Commerce Security Issues

E-commerce systems are based upon internet use, which provides open and easy communications on a global basis. However, because the internet is unregulated, unmanaged and uncontrolled, it poses a wide range of risks and threats to the systems operating on it. The use of the internet means that your internal IT and e-commerce systems are potentially accessible by anyone, irrespective of their location.

3.1.2 Threats from Hackers and the Risks to Business

Some of the more common threats that hackers pose to e-commerce systems include:

- carrying out denial-of-service (DoS) attacks that stop access to authorised users of a website, so that the site is forced to offer a reduced level of service or, in some cases, ceases operation completely
- gaining access to sensitive data- such as price lists, catalogues and valuable intellectual property, and altering, destroying or copying it
- altering your website, thereby damaging your image or directing your customers to another site
- gaining access to financial information about your business or your customers, with a view to perpetrating fraud
- using viruses to corrupt your business data.

3.1.3 Impact of a Security Incident on the Business

If your website is hacked into, it can have a significant impact upon a business running an e-commerce service. The potential business implications of a security incident include the following:

- direct financial loss as a consequence of fraud or litigation
- subsequent loss as a result of unwelcome publicity
- criminal charges if you are found to be in breach of the Data Protection or Computer Misuse Acts, or other regulation on e-commerce
- loss of market share if customer confidence is affected by a DoS attack
- the images presented by your business, together with the brands under which you trade, are valuable assets. It is important to recognise that the use of e-commerce creates new ways for both image and brands to be attacked.

3.1.4 Identifying E-Commerce Threats and Vulnerabilities

It is important that you understand the risks facing your e-commerce system, and the potential impact of any security incident.

What are the threats?

Threats to e-commerce systems can be either malicious or accidental. The procedures and controls you put in place to protect your site should help minimise both.

Malicious threats could include:

- hackers attempting to penetrate a system to read or alter sensitive data
- burglars stealing a server or laptop that has unprotected sensitive data on its disk
- impostors posing as legitimate users and even creating a website similar to yours
- authorised users downloading a webpage or receiving an email with hidden active content that attacks your systems or sends sensitive information to unauthorised people.

You should consider potential threats to sensitive information from three angles:

- where (or who) are the potential sources of threats?

- what level of expertise is the hacker likely to possess? How much effort are they likely to expend in attempting to breach your security?
- what facilities and tools are available to them?

The real threat may not be the most obvious one. Attacks from authorised users (such as a disaffected employee or partner) are far more common than attacks by hackers. You cannot completely eliminate the risks to your business so you need to plan how you will reduce the various threats and vulnerabilities.

Reduction of Threats

You can reduce the threats to your e-commerce system and services by:

- making your business less of a target - consider what needs to be on public or shared systems and, where possible, remove sensitive business information
- increasing the perception of your business as secure - ensure that all aspects of security appear to be installed and well managed
- ensuring that warning signs on your website are clearly displayed to any user who attempts to access secure parts of it
- not providing information publicly on your security systems or operating systems
- regularly updating anti-virus software and subscribing to a virus alert service to ensure you hear about new threats
- training your employees in proper email and internet usage, e.g. to not open unfamiliar attachments, click on suspicious links or forward virus warning messages
- configuring your email system to open attachments using a 'viewer' to prevent infection by macro viruses, which can be hidden in files.

Reduction of Vulnerability

Reduced vulnerability measures are designed to reduce or remove known weaknesses in the e-commerce environment. Typical measures include:

- Installing firewalls to filter out illegitimate access attempts. Such systems should be configured correctly and the rules on which they are based should reflect the needs of the business
- Installing strong authentication processes. These guarantee the identity of users and are more secure than simple password systems. There are increasing numbers of biometric and smart-card solutions available, but you should at least consider a two-

stage approach based upon something you have, e.g. a card known to the system, as well as something you know, e.g. a private personal identification number

- Using digital certificates to provide trust between individuals, systems and trading partners. These provide secure communications by authenticating individuals, systems or organisations and protect individual transactions through the creation of digital signatures
- Deploying Virtual Private Networks (VPNs) to provide a private channel over the internet that trading partners can use to exchange business information securely.
- Applying all available operating system and security product patches to ensure that hackers are not able to exploit known vulnerabilities.

3.2 Common E-Commerce Security Controls

You should introduce sufficient security controls to reduce risk to e-commerce systems. However, these controls should not be so restrictive that they damage the employees' performance. Some of the common security controls are listed below.

User Authentication

There are several techniques that can identify and verify someone seeking to access an e-commerce system. These include:

- a user name and password combination, where the password can vary in length and include numbers and characters. Remember to include a system that prompts employees to change their passwords at regular intervals
- 'two-factor' authentication requiring something the user has (e.g. an authentication token) and something the user knows (e.g. a personal identification number)
- a digital certificate that enables authentication through the use of an individual's unique signing key
- a person's unique physical attribute, referred to as a biometric. This can range from a fingerprint or iris scan, through to retina or facial-feature recognition.

Access Control

This restricts different classes of users to subsets of information and ensures that they can only access data and services for which they have been authorised. These include using:

- network restrictions to prevent access to other computer systems and networks

- .application controls to ensure individuals are limited in the data or service they can access
- restrictions on what can be copied from the system and stored on pen drives, memory sticks or CDs/DVDs
- limits on the sending and receiving of certain types of email attachments
- changes to access privileges must be controlled to prevent users retaining them if they transfer between departments or leave the business.

Data Encryption

Encryption scrambles data, and is used to protect information that is being held on a computer, copied onto CDs or DVDs or transmitted over a network. It uses technologies such as virtual private networks (VPNs) and secure socket layers.

Firewall

This is a hardware or software security device that filters information passing between internal and external networks. It controls access to the internet by internal users, preventing outside parties from gaining access to systems and information on the internal network. A firewall can be applied at the network level, to provide protection for multiple workstations or internal networks, or at the personal level where it is installed on an individual PC.

Intrusion Detection

These products monitor system and network activity to spot any attempt being made to gain access. If a detection system suspects an attack, it can generate an alarm, such as an email alert, based upon the type of activity it has identified. Despite the sophistication of these controls, they are only as good as the people who use them. A continual awareness programme is a vital component of any security policy.

3.3 Risks from Viruses, Trojans, Worms and Botnets

The way malware- viruses, worms, trojans, botnets and spyware - are being used has also changed. Infection is usually the first step in a process aimed at stealing confidential data or opening holes in security defences for hackers to exploit.Viruses, trojan horses, worms and botnets are all computer programs that can infect computers.

Viruses and worms spread across computers and networks by making copies of themselves, usually without the knowledge of the computer user. A Trojan horse is a program that appears to be legitimate but actually contains another program or block of undesired malicious,

destructive code, disguised and hidden in a block of desirable code. Trojans can be used to infect a computer with a virus.

A back-door trojan is a program that allows a remote user or hacker to bypass the normal access controls of a computer and gain unauthorised control over it. Typically, a virus is used to place the back-door trojan onto a computer, and once the computer is online, the person who sent the trojan can run programs on the infected computer, access personal files, and modify and upload files.

A botnet is a group of infected, remotely-controlled computers. The hacker sends out a virus, trojan or worm to ordinary computers. The virus, trojan or worm gains access to the computer, usually through some malicious application that they are carrying. This in turn allows the hacker to gain full control of the now-infected computers. These computers can then be used to launch denial-of-service attacks, distribute spam emails and commit click fraud, identity theft and thefts of log-in details and credit card numbers.

Risks can also come from popular social networking sites. Be aware of messages containing links to current events, entertainment, or other high traffic content. It has been reported that these links take the user to phishing websites where personal user details can be stolen or worms, trojans or viruses can strike.

Botnets are very difficult to prevent by the use of software tools alone, it is important that users follow best practice guidance with regards to emails and website usage. It is important that you ensure that all software and anti-virus tools are up to date, to prevent malicious code from exploiting security holes in software and making your system vulnerable.

3.3.1 E-Commerce Systems Risk Assessment

A risk assessment can be carried out to provide an organisation with a clear understanding of the risks facing its e-commerce system and associated business processes, and the potential impact if a security incident arises.

A key part of a risk assessment is defining the business' information access requirements. This will cover the rules of access for different groups of users. For example, different rules may apply for employees, consultants, managed service providers, suppliers, customers, auditors and government agencies. Any analysis should also take account of how electronic transactions are verified. How do you know that an order has actually come from a known customer? Where contracts are exchanged

electronically, who can sign them and how can it be proved which is the signed version?

3.3.2 Managing Risk in E-Commerce

Barriers to entering e-commerce are comparatively low, but new opportunities can be accompanied by new risks. Risk assessment means listing all of the risks a business might face and assigning varying degrees of importance to them. Risk management means prioritising these risks and formulating policies and practices to balance and mitigate them.

Every business can benefit from a risk assessment of their e-commerce systems, although smaller businesses may not need to implement some of the more sophisticated techniques described in this guide. This guide explains the risks that you need to be aware of or ask your e-commerce developer about. It also explain show risk assessment and management can help in recognising and quantifying the risks and how to balance them against the potential gains.

3.3.3 Identifying Risks in E-Commerce

Today's threats to e-commerce systems include:

1. Physical threats - threats posed to the IT infrastructure by, for example, fire or flood.

2. Data threats - threats posed to software, files, databases, etc by viruses, trojans and so forth. Errors by people - e.g. employees clicking on links within messages received on social networking websites that are found to be malicious or the accidental deletion of data by an employee.

3. Hoaxes - e.g. warnings about non-existent viruses circulated by email. Although these are relatively harmless in themselves, they can spread rapidly and cause as many problems as a genuine virus by clogging up email systems.

4. Technical failure - e.g. software bugs.

5. Infrastructure failures - e.g. server crashes.

6. Credit card and payment fraud.

7. Malicious attacks from inside or outside your business.

8. Hacker threats should your computers become part of a larger group of infected, remote-controlled computers known as a botnet. Typical threats to e-commerce systems.

9. Risk to corporate information and intellectual property from internal staff and trading partners. It is difficult to control how sensitive information will be handled by third parties or contract workers. Few organisations have systems in place to ensure common standards in vetting staff and security between trading partners.

10. Hacker exploitation of errors in software application design, technical implementation or systems operation. In addition, vulnerabilities are widely published for anyone to read or experiment with.

11. Website defacement - where the corporate image or web messages are changed - and virus attacks can lead to commercial embarrassment and damage to a business' corporate image.

12. Denial-of-service attacks which use a flood of false messages to crash or slow down a business' systems. This can have a devastating impact on communications and e-commerce activity. There are increasing opportunities for individuals to mount such an attack with a low risk of traceability. Hackers are increasingly using botnets - a group of computers infected with malicious software and controlled remotely to cause these attacks.

Potential Impact of a Security Breach

Unless swift action is taken, any problems with your e-commerce site will be immediately obvious to the world. E-commerce customers typically have little loyalty, so if your website is unavailable they will simply move on to one of your competitors. In addition, technical failure can also have a significant impact on your key trading partners.

It is therefore important that you take steps to prevent problems, as this is much more cost-effective than trying to fix them once they have occurred. While some viruses are merely irritants, others can have extremely harmful effects. Some of the threats that they pose to e-commerce systems include:

- corrupting or deleting data on the hard disk of your server
- stealing confidential data by enabling hackers to record user keystrokes

- enabling hackers to hijack your system and use it for their own purposes, which may include adding it to a larger group of botnets

- using your computer for malicious purposes, such as carrying out a denial-of-service attack on another website, alone or as part of a botnet.
- harming customer and trading partner relationships by forwarding viruses to them from your own system

How do Viruses Spread?

Viruses are able to infect computers through a number of different routes. These include:

- CDs and other forms of removable media containing infected documents
- Emails containing infected attachments

- Internet worms that exploit holes in your system's operating system when you are connected to the internet

Spyware

Spyware is software that is placed on your computer when you visit certain websites. It is used to secretly gather information about your usage and sends it back to advertisers or other interested parties. In addition to tracking your system use, it can also slow down or crash your computer.

3.4 Preventing Problems from Viruses, Trojans, Worms and Botnets

Anti-virus software should be used to protect against viruses. It can detect viruses, prevent access to infected files and quarantine any infected files.

Anti-Virus Software

There are different types of anti-virus software:

- Virus scanners - must be updated regularly, usually by connecting to the supplier's website, in order to recognise new viruses.

- Heuristics software - detects viruses by applying general rules about what viruses look like. While it does not require frequent updates, this software can be prone to giving false alarms.
- The threat of virus infection can be minimised by:

Using a virus checker on your internet connection to trap viruses both entering and leaving the business' IT systems. Running virus checkers on servers to trap any viruses that have managed to evade the above check. Running individual virus checkers on users' PCs to ensure that they have not downloaded a virus directly, or inadvertently introduced one via a CD or other forms of removable media. Because new viruses emerge at a rapid rate, it is a good idea to select software that it can be updated often, usually via download from the manufacturer's website.

3.5 Other Methods of Preventing Viruses

Other ways of preventing of viruses include:

- installing software patches provided by the supplier of your operating system to close security loopholes that could be exploited by viruses
- using a firewall to prevent unauthorised access to your network
- avoiding the download of unauthorised programs and documents from the internet and ensuring your staff adhere to this policy.

Your systems may still become infected even if you follow the above guidelines. Make regular back-ups of your data and software so that you can replace infected files with clean copies.

Virus Alert Services

Consider subscribing to a service or supplier who will provide virus alerts for you. Some are available on a paid-for basis, while others are provided by suppliers of anti-virus software to their customers.

Anti-Spyware Software

There is software available that scans your systems and detects known spyware programs. Spyware can then be removed or quarantined. As with anti-virus software, it is important to keep this software up to date How safe is your business from viruses? If you answer 'no' to any of the following questions, you urgently need to improve your business' anti-virus measures:

- do you have virus defence software installed on your computer system?

- if you have virus defence software installed, do you scan all incoming email attachments? Do you regularly update your virus defence software?
- do you - and your staff - know how to identify likely sources of viruses?
- do you know who to call if your machines become infected?

3.5.1 Assessing the Risks

Risk assessment involves determining:

- The likelihood of a risk occurring
- Its possible impact

Risk assessment can be either qualitative or quantitative.

Qualitative risk assessment involves identifying:

- The threats
- Where your systems are vulnerable
- The controls you can put in place to counter or minimise the threats

Once these have been identified, you should be able to assess whether the risk is high, medium or low.

Quantitative risk assessment

Quantitative assessment assumes a value can be placed on any losses suffered as a result of a security violation. Probability can be used to measure the likelihood of such incidents occurring.

How to quantify the risks

The e-commerce environment relies on customer-facing technology, such as websites and forums, as well as more traditional technology to provide the supporting networks. Keep yourself informed about the latest threats posed to your systems. New vulnerabilities can be exploited very quickly and can have a widespread impact. It is important that your security management system is flexible and reactive enough to deal with these risks. All risks can be quantified against their probability and potential impact on a high - medium - or low-risk basis.

To quantify risks:

- brainstorm all possible risks with relevant internal and external experts
- agree on a probability rating (high, medium or low) for each risk
- agree on an impact rating for each risk (high, medium or low)

The most important risks are indicated as 5, with the least important risks rated as 1.Once you have quantified all possible risks, you can assess how much time and money you should spend implementing appropriate security controls. For example, it is not worth implementing controls for events that are unlikely to occur and which would have little impact. On the other hand, you should concentrate resources on developing security controls for events that are likely to occur and would have a big impact on your business.

3.5.2 Risk Avoidance and Transfer

If you have identified risks to your business information systems that cannot be countered by any technical controls you can put in place, then there are other options.

Risk Avoidance

Risk avoidance is the most effective way of managing risk. It means making a decision not to enter into a new way of working because of the inherent risks this would introduce. While this may be a valid decision, it can be hard to justify. The business drivers for changing working practices can be extremely strong, especially if there is pressure from your competitors. Risk avoidance may not always be a practical option for your business, but it can form an important part of your overall consideration of risk. Even if you decide against using it, at least you will be making the decision based on informed judgment.

Risk Transfer

Risk can be transferred in two ways. The first is through insurance. This can be problematic in e-commerce as it is often difficult to quantify the business loss following a security incident. It is even more difficult if the impact was due to a security violation within a trading partner's business. The second option is to contract aspects of your e-commerce function out to a third party. This could involve another business hosting your systems or running them on your behalf. The attraction is that many third-party hosting services operate in a more secure technical environment. However, while contractual arrangements can describe the service agreements and any penalties that may be inflicted, the primary impact of any incident will always be on your business. It could also potentially cost you more money.

SELF-ASSESSMENT EXERCISE

List and explain 6 ways you can reduce the threats to your e-commerce systems

4.0 CONCLUSION

With high level of dependency upon the services provided by e-commerce systems, it is essential that they are protected from the threats posed by hackers, viruses, fraud and denial-of-service attacks. They are based upon internet use, which provides open and easy communications on a global basis. However, because the internet is unregulated, unmanaged and uncontrolled, it poses a wide range of risks and threats to the systems operating on it. Some of the more common threats that hackers pose to e-commerce systems include: carrying out denial-of-service, gaining access to sensitive data, using viruses to corrupt your business data.

Threats to e-commerce systems can be either malicious or accidental. The procedures and controls you put in place to protect your site should help minimise both. You cannot completely eliminate the risks to your business so you need to plan how you will reduce the various threats and vulnerabilities. You can reduce the threats to your e-commerce system and services by:

- making your business less of a target
- increasing the perception of your business as secure
- regularly updating anti-virus software

Reduced vulnerability measures are designed to reduce or remove known weaknesses in the e-commerce environment. Typical measures include:

- installing firewalls to filter out illegitimate access attempts
- installing strong authentication processes. These guarantee the identity of users using digital certificates to provide trust between individuals, systems and trading partners.

Some of the common security controls are: user authentication, access control, and data encryption.

Viruses, trojan horses, worms and botnets are all computer programs that can infect computers. Viruses and worms spread across computers and networks by making copies of themselves, usually without the knowledge of the computer user. Today's threats to e-commerce systems include: physical threats, data threats, hoaxes, technical failure. Anti-

virus software should be used to protect against viruses. It can detect viruses, prevent access to infected files and quarantine any infected files.

5.0 SUMMARY

In this unit, you learnt about how to secure your e-commerce systems; some common e-commerce security controls; the risks from viruses, trojans, worms and botnets; how to prevent problems from viruses, trojans, worms and botnets; and other methods of preventing viruses. Having understood the topics discussed, you may now attempt the questions below.

6.0 TUTOR-MARKED ASSIGNMENT

i. List and explain some common security controls in e-commerce
ii. Discuss about the threats in e-commerce systems
iii. Explain how to prevent problems from viruses, trojans, worms and botnets.

7.0 REFERENCES/FURTHER READING

Bonnett, K. (2000). *An IBM Guide to Doing Business on the Internet.* U.S.A.:McGraw-Hill.

Cameron, D. (1997). *Electronic Commerce: The New Business Platform for the Internet*. Computer Technology Research.

Choi, S., Stahl, D.O & Whinstone, A.B. (1997). *The Economics of Electronic Commerce*. Indianapolis, IN: Macmillan.

Choi, *et al*. (1997). *The Economics of Electronic Commerce*. Macmillan Technical Publications, p. 18.

Coulouris, G., Dollimore J. & Kindberg, T. (2001). *Distributed Systems Concepts and Design*. Harlow: Addison-Wesley.

Cronin, M. J. (2000). *Unchained Value: The New Logic of Digital Business.* U.S.A.: Harvard Business School Press.

Fournier, R. (1998). *A Methodology for Client Server and Web Application Development*. Yourdon Press.

Howcroft, D & Carroll, J. (2000). *A Proposed Methodology for Web Development.* Proceedings of the European Conference on Information Systems, Vienna, pp. 290-297.

Ince, D. (2003). *Developing Internet Applications.* Pearson Education Limited.

Kalakota, R. (1999). *E-Business*. Reading, MA: Addison-Wesley.

Kalakota, R. & Robinson M. (1999) *e-Business, Roadmap for Success*. Reading, MA: Addison-Wesley.

Kalakota, R. & Whinstone A.B. (1997). *Electronic Commerce*. Reading, MA: Addison-Wesley.

Kalakota, R. & Whinston A.B. (1997). *Electronic Commerce: A Manager's Guide*. Addison Wesley Longman, Inc.40

Kalakota, R. & Whinston,A.B.(1996)..*Frontiers of Electronic Commerce*. Addison-Wesley.

Kleindl, B. A. (2003). *Strategic Electronic Marketing: Managing e-business,* Thomson Learning, Mason, USA.

Korper, S. & Ellis J. (2000). *The E-Commerce Book: Building the E-Empire*. Morgan Kaufmann.

Kou, W. (2003). *Payment Technologies for E-Commerce*. Springer.

Lallana, E., Quimbo, R.S. & Zorayda R.B.A.(2000). *E-Primer: An Introduction to E-commerce*. DAI-AGILE, a USAID-Funded Project.

Lamont, D. (2001*). Conquering the Wireless World: The Age of M-commerce.* United Kingdom: Capstone Publishing Inc.

Mann, C., Eckert S. E. & Knight S.C. (2000). *Global Electronic Commerce: A Policy Primer.* Washington DC: Institute for International Economics.

May, P. (2000). *The Business of E-commerce*. Cambridge Press.

McFadyen, T.M. (2008). *e-commerce Best Practices*. McFadyen Solutions.

Plant, R. (2000). *e-commerce Formulation of Strategy.* U.S.A.: Prentice Hall Inc.

Rahman, S. (2000). *Electronic Commerce: Opportunities and Challenges.* IGI Global.

Reynolds, J. (2004). *The Complete E-Commerce book*. CMP.

Rich, J. (2008). *Design & Launch an e-commerce Business in a week.* Entrepreneur Press.

Rockwell, B. (1998). *Using The Internet To Compete in a Global Marketplace*. Wiley & Sons.

Rosen, A. (2000). T*he E-commerce Question and Answer Book: A Survival Guide for Business Managers.* American Management Association.

Schneider, G. (2010). *Electronic Commerce.* Course Technology.

Slawsky, J. H. & Zafar S. (2005). *Developing and Managing a Successful Payment Card*. Ashgate Publishing.

Smith, D. (2001). *The E-business Book: A Step-by-Step Guide to E-commerce and Beyond.* Princeton: Bloomberg Press.

Standing, C. (2000). *Internet Commerce Development.* Artech House Publishers, Boston.

Timmers, P. (2000). *Electronic Commerce-Strategies and Models for Business-to-Business Trading*. John Wiley & Sons,

Treese, G. W. & Stewart, L. C. (1998). *Designing Systems For Internet Commerce.* Addison-Wesley.

Trepper C.H. (2000). *E-Commerce Strategies*. Microsoft Press.

Turban, E., Lee, J., King D. & Chung, H.M. (1999). *Electronic Commerce: A Managerial Perspective*. Prentice Hall.

www.businesslink.gov.uk

www.answers.com

www.forums.asp.net

www.transaction.net

www.w3.org