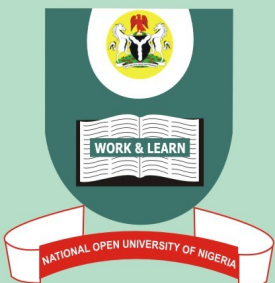


# **MBE 705: FUNDAMENTALS OF E-COMMERCE/STRATEGY**



**NATIONAL OPEN UNIVERSITY OF NIGERIA**

<b>COURSE GUIDE</b>
-------------------------

**MBE 705****FUNDAMENTALS OF E-COMMERCE/STRATEGY**

Course Developer/Writer

Gerald .C. Okereke  
Eco Communications Inc.  
Ikeja, Lagos

Course Editor

Mr. E. Eseyin  
National Open University of Nigeria

Programme Leader

Dr. O. J. Onwe  
National Open University of Nigeria

Course Coordinator

Mr. Timothy O. Ishola  
National Open University of Nigeria

**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  
Nigeria

e-mail: [centralinfo@nou.edu.ng](mailto:centralinfo@nou.edu.ng)  
URL: [www.nou.edu.ng](http://www.nou.edu.ng)

Published by  
National Open University of Nigeria

Printed 2008

ISBN: 978-058-270-3

All Rights Reserved

<b>CONTENTS</b>	<b>PAGE</b>
Course Aims.....	1
Course Objectives.....	1
Credit Units.....	2
Study Units.....	2
Course Assessment.....	2
<b>Course Aim</b>	

This course is to expose students to the concepts and definitions of e-commerce, as well as the comparison with a closely related concept of e-business and mobile commerce. It is primarily aimed at understanding how to develop e-commerce strategies, manage it and its attending applications in business, commerce, education, governance and much more. The course further encourages the business owners to quickly move from traditional ways of doing business to electronic options.

### **Course Objectives**

The major objectives of this course are to:

- define e-commerce and compare and contrast it from e-business;
- identify some business applications of e-commerce;
- identify, define and differentiate the various forms of e-commerce;
- 1. answer the question of the extent to which e-commerce helps consumers;
- 2. have an idea how business relationships can be transformed by e-commerce;
- i.define what is Internet;
- ii.know how the Internet is relevant to e-commerce;
- \*0identify the benefits of intranet in e-commerce;
- \*1know how to develop and create an intranet;
- i.differentiate m-commerce from e-commerce;
- ii.know some of the products and services available in m-commerce;
- identify the strategic goals of e-commerce strategy;
- answer the question of the components of an e-commerce strategy;
- know the use of the Internet in the distribution of software;
- know what is Internet distribution chain;
- know the various types of security measures for e-commerce;
- have a basic understanding of how to set up security measures;
- know the numerous forms of challenges facing e-commerce;
- know in what ways e-commerce has been useful to small scale businesses in developing countries;

- know the roles of government in e-commerce initiatives; and
  - identify the kind of government policies to favour e-commerce.

## Credit Units

This course attracts three credit units

## Study Units

The study units of this course are as follows:

### Module 1

- |               |   |
|---------------|---|
| Unit 1        | Concepts and Definitions                  |
| Unit 2        | Types and Benefits of E-Commerce          |
| Unit 3        | Applications and Use in E-Payment Systems |
| Unit 4        | Internet and E-Commerce                   |
| <b>Unit 5</b> | <b>Intranet and E-Commerce</b>            |

### Module 2

- |        |  |
|--------|--|
| Unit 1 | Mobile Commerce  |
| Unit 2 | E-Commerce Strategies  |
| Unit 3 | Economics of E-Commerce: Case of Software Distribution over Internet |
| Unit 4 | E-Commerce Security  |

### Module 3

- |               |   |
|---------------|---|
| Unit 1        | E-Commerce Challenges   |
| Unit 2        | E-Commerce in Developing Countries                              |
| <b>Unit 3</b> | <b>Government and E-Commerce (Case of Developing Countries)</b> |
| Unit 4        | Company Case Studies  |

## Course Assessment

- i. Assignments = 30%
- ii. Examination = 70%.

Course Code	MBE 705
Course Title	Fundamentals of E-Commerce/Strategy
Course Developer/Writer	Gerald .C. Okereke Eco Communications Inc. Ikeja, Lagos
Course Editor	Mr. E. Eseyin National Open University of Nigeria
Programme Leader	Dr. O. J. Onwe National Open University of Nigeria
Course Coordinator	Mr. Timothy O. Ishola National Open University of Nigeria



**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  
Nigeria

e-mail: [centralinfo@nou.edu.ng](mailto:centralinfo@nou.edu.ng)  
URL: [www.nou.edu.ng](http://www.nou.edu.ng)

Published by  
National Open University of Nigeria

Printed 2008

ISBN: 978-058-270-3

All Rights Reserved



<b>CONTENTS</b>	<b>PAGE</b>
<b>Module 1.....</b>	<b>1</b>
Unit 1 Concepts and Definitions.....	1
Unit 2 Types and Benefits of E-Commerce.....	15
Unit 3 Applications and Use in E-Payment Systems..	27
Unit 4 Internet and E-Commerce.....	41
Unit 5 Intranet and E-Commerce.....	55
<b>Module 2.....</b>	<b>66</b>
Unit 1 Mobile Commerce.....	66
Unit 2 E-Commerce Strategies.....	81
Unit 3 Economics of E-Commerce: Case of Software Distribution over Internet.....	90
Unit 4 E-Commerce Security.....	103
<b>Module 3.....</b>	<b>117</b>
Unit 1 E-commerce Challenges.....	117
Unit 2 E-commerce in Developing Countries.....	130
Unit 3 Government and E-commerce (Case of Developing Countries).....	141
Unit 4 Company Case Study.....	152



## MODULE 1

Unit 1	Concepts and Definitions
Unit 2	Types and Benefits of E-Commerce
Unit 3	Applications and Use in E-Payment Systems
Unit 4	Internet and E-Commerce
Unit 5	Intranet and E-Commerce

## UNIT 1 CONCEPTS AND DEFINITIONS

### CONTENTS

1.0	Introduction
2.0	Objectives
3.0	<b>Main Content</b>
3.1	<b>Early Development</b>
3.2	<b><i>What is E-Commerce?</i></b>
3.3	Statistics
3.4	Is E-Commerce the Same as E-Business?
3.5	<b><i>Business Applications</i></b>
3.6	<b><i>Forms</i></b>
3.7	<b><i>What Forces are Fueling E-Commerce?</i></b>
	3.7.1 <i>Economic Forces</i>
	3.7.2 <i>Market Forces</i>
	3.7.3 <i>Technology Forces</i>
3.8	<b><i>What are the Components of a Typical Successful E-Commerce Transaction Loop?</i></b>
4.0	Conclusion
5.0	Summary
6.0	Tutor-Marked Assignment
6.0	References/Further Readings

### 1.0 INTRODUCTION

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

business has enhanced productivity, encouraged greater customer participation, and enabled mass customization, besides reducing costs.

With developments in the Internet and Web-based technologies, distinctions between traditional markets and the global electronic marketplace-such as business capital size, among others-are gradually being narrowed down. The name of the game is strategic positioning, the ability of a company to determine emerging opportunities and utilize 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.

On another plane, developing countries are given increased access to the global marketplace, where they compete with and complement the more developed economies. Most, if not all, developing countries are already participating in e-commerce, either as sellers or buyers. However, to facilitate e-commerce growth in these countries, the relatively underdeveloped information infrastructure must be improved. Among the areas for policy interventions are:

- High Internet access costs, including connection service fees, communication fees, and hosting charges for websites with sufficient bandwidth;
- Limited availability of credit cards and a nationwide credit card system;
- Underdeveloped transportation infrastructure resulting in slow and uncertain delivery of goods and services;
- Network security problems and insufficient security safeguards;
- Lack of skilled human resources and key technologies (i.e., inadequate professional IT workforce);
- Content restriction on national security and other public policy grounds, which greatly affect business in the field of information services, such as the media and entertainment sectors;
- Cross-border issues, such as the recognition of transactions under laws of other ASEAN member-countries, certification services, improvement of delivery methods and customs facilitation; and

- The relatively low cost of labor, which implies that a shift to a comparatively capital intensive solution (including investments on the improvement of the physical and network infrastructure) is not apparent.

It is recognized that in the Information Age, Internet commerce is a powerful tool in the economic growth of developing countries. While there are indications of e-commerce patronage among large firms in developing countries, there seems to be little and negligible use of the Internet for commerce among small and medium sized firms. E-commerce promises better business for SMEs and sustainable economic development for developing countries. However, this is premised on strong political will and good governance, as well as on a responsible and supportive private sector within an effective policy framework. This primer seeks to provide policy guidelines toward this end.

## **2.0 OBJECTIVES**

At the end of this unit the student is expected to:

- know areas of policy intervention
- trace the early developments of technologies associated with e-commerce
- define e-commerce and compare and contrast it from e-business
- identify some business applications of e-commerce
- know the forms of e-commerce and the forces driving e-commerce.

## **3.0 MAIN CONTENT**

### **3.1 Early Development**

The meaning of electronic commerce has changed over the last 30 years. Originally, electronic commerce meant the facilitation of commercial transactions electronically, using technology such as Electronic Data Interchange (EDI) and Electronic Funds Transfer (EFT). These were both introduced in the late 1970s, allowing businesses to send commercial documents like purchase orders or invoices electronically. The growth and acceptance of credit cards, automated teller machines (ATM) and telephone banking in the 1980s were also forms of electronic commerce. From the 1990s onwards, electronic commerce would additionally include enterprise resource planning systems (ERP), data mining and data warehousing.

Perhaps it is introduced from the Telephone Exchange Office, or maybe not. The earliest example of many-to-many electronic commerce in physical goods was the Boston Computer Exchange, a marketplace for used computers launched in 1982. The first online information marketplace, including online consulting, was likely the American Information Exchange, another pre-Internet online system introduced in 1991.

### **3.2 *What is E-Commerce?***

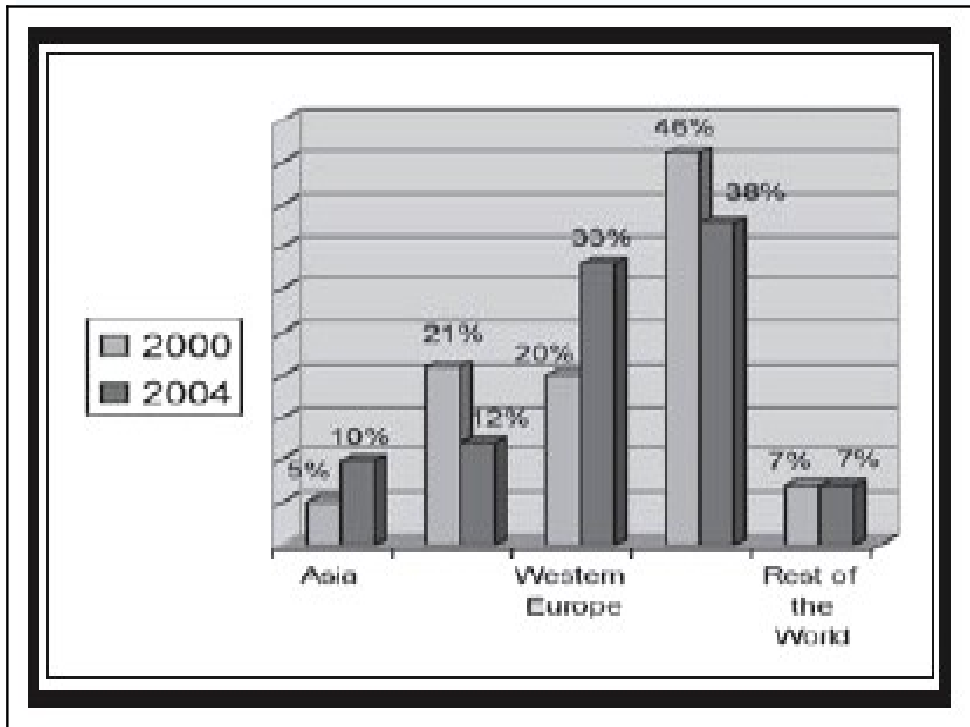
Electronic commerce or e-commerce refers to a wide range of online business activities for products and services. It also pertains to “any form of business transaction in which the parties interact electronically rather than by physical exchanges or direct physical contact.”

E-commerce is 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. Though popular, this definition is not comprehensive enough to capture recent developments in this new and revolutionary business phenomenon. A more complete definition is: 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 organizations, and between organizations and individuals.

### **3.3 Statistics**

International Data Corp (IDC) estimates the value of global e-commerce in 2000 at US\$350.38 billion. This is projected to climb to as high as US \$3.14 trillion by 2004. IDC also predicts an increase in Asia's percentage share in worldwide e-commerce revenue from 5% in 2000 to 10% in 2004 (See Figure 1).

**Figure 1: Worldwide E-Commerce Revenue, 2000 and 2004 (as a % share of each country/region)**



Asia-Pacific e-commerce revenues are projected to increase from \$76.8 billion at year-end of 2001 to \$338.5 billion by the end of 2004.

**Figure 2: Online Revenues**

Company	Online Revenues (in billions of dollars)
Amazon.com	3.12
Office Depot	1.60
Staples	0.95
Gateway, Inc.	0.76
Costco Wholesale	0.45
Barnesandnoble.com	0.41
Buy.com	0.40
QVC.com	0.35
Spiegel Group	0.33
J.C. Penny	0.32

### 3.4 Is E-Commerce the Same as E-Business?

While some use e-commerce and e-business interchangeably, they are distinct concepts. In e-commerce, information and communications technology (ICT) is used in inter-business or inter-organizational transactions (transactions between and among firms/organizations) and in business-to-consumer transactions (transactions between firms/organizations and individuals).

In e-business, on the other hand, ICT is used to enhance one's business. It includes any process that a business organization (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 organization's processes to deliver additional customer value through the application of technologies, philosophies and computing paradigm of the new economy.”*

Three primary processes are enhanced in e-business:

1. **Production processes**, which include procurement, ordering and replenishment of stocks; processing of payments; electronic links with suppliers; and production control processes, among others;
2. **Customer-focused processes**, which include promotional and marketing efforts, selling over the Internet, processing of customers' purchase orders and payments, and customer support, among others; and
3. **Internal management processes**, which include employee services, training, internal information-sharing, video-conferencing, and recruiting. Electronic applications enhance information flow between production and sales forces to improve sales force productivity. Workgroup communications and electronic publishing of internal business information are likewise made more efficient.

***Is the Internet economy synonymous with e-commerce and e-business?***

The Internet economy is a broader concept than e-commerce and e-business. It includes e-commerce and e-business.

The CREC (Center for Research and Electronic Commerce) at the University of Texas has developed a conceptual framework for how the Internet economy works. The framework shows four layers of the Internet economy-the three mentioned above and a fourth called intermediaries (see Table 1).



**Table 1: Internet Economy Conceptual Frame**

<b>Internet Economy Layer</b>	<i>Layer 1 - Internet Infrastructure:</i> Companies that provide the enabling hardware, software, and networking equipment for Internet and for the World Wide Web	<i>Layer 2 - Internet Applications Infrastructure:</i> Companies that make software products that facilitate Web transactions; companies that provide Web development design and consulting services	<i>Layer 3 - Internet Intermediaries:</i> Companies that link e-commerce buyers and sellers; companies that provide Web content; companies that provide marketplaces in which e-commerce transactions can occur	<i>Layer 4 - Internet Commerce:</i> Companies that sell products or services directly to consumers or businesses.
<b>Types of Companies</b>	Networking Hardware/Software Companies Line Acceleration Hardware Manufacturers PC and Server Manufacturers Internet Backbone Providers Internet Service Providers (ISPs) Security Vendors Fiber Optics Makers	Internet Commerce Applications Web Development Software Internet Consultants Online Training Search Engine Software Web-Enabled Databases Multimedia Applications	Market Makers in Vertical Industries Online Travel Agents Online Brokerages Content Aggregators Online Advertisers Internet Ad Brokers Portals/Content Providers	E-Tailers Online Entertainment and Professional Services Manufacturers Selling Online Airlines Selling Online Tickets Fee/Subscription-Based Companies
<b>Examples</b>	Cisco AOL AT&T Qwest	Adobe *Microsoft *IBM Oracle	e-STEEL Travelocity e-Trade Yahoo! ZDNet	Amazon.com Dell

*Based on Centre for Research in Electronic Commerce, University of Texas, "Measuring the Internet Economy," 6 June 2000.*

### **3.5 Business Applications**

Some common applications related to electronic commerce are:

- E-mail and messaging
- Documents, spreadsheets, database
- Accounting and finance systems
- Orders and shipment information
- Enterprise and client information reporting
- Domestic and international payment systems
- Newsgroup
- On-line Shopping

- Messaging
- Conferencing

### **3.6    *Forms***

Contemporary electronic commerce involves everything from ordering "digital" content for immediate online consumption, to ordering conventional goods and services, to "meta" services to facilitate other types of electronic commerce.

On the consumer level, electronic commerce is mostly conducted on the World Wide Web. An individual can go online to purchase anything from books, grocery to expensive items like real estate. Another example will be online banking like online bill payments, buying stocks, transferring funds from one account to another, and initiating wire payment to another country. All these activities can be done with a few keystrokes on the keyboard.

On the institutional level, big corporations and financial institutions use the internet to exchange financial data to facilitate domestic and international business. Data integrity and security are very hot and pressing issues for electronic commerce these days.

### **3.7    *What Forces are Fueling E-Commerce?***

There are at least three major forces fuelling e-commerce: economic forces, marketing and customer interaction forces, and technology, particularly multimedia convergence.

#### **3.7.1    *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. Among the companies with efficient corporate intranets are Procter and Gamble, IBM, Nestle and Intel.

### **Case 1: SESAMi.NET: Linking Asian Markets through B2B Hubs**

SESAMi.NET is Asia's largest B2B e-hub, a virtual exchange integrating and connecting businesses (small, medium or large) to trading partners, e-marketplaces and internal enterprise systems for the purpose of sourcing out supplies, buying and selling goods and services online in real time. The e-hub serves as the center for management of content and the processing of business transactions with support services such as financial clearance and information services.

It is strategically and dynamically linked to the Global Trading Web (GTW), the world's largest network of trading communities on the Internet. Because of this very important link, SESAMi reaches an extensive network of regional, vertical and industry-specific interoperable B2B e-markets across the globe.

### **3.7.2 Market 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.

### **Case 2: Brazil's Submarino19: Improving Customer Service through the Internet**

Brazil's Submarino is a classic example of successful use of the Internet for improved customer service and support. From being a local Sao Paulo B2C e-commerce company selling books, CDs, video cassettes, DVDs, toys, electronic and computer products in Brazil, it expanded to become the largest company of its kind in Argentina, Mexico, Spain and Portugal. Close to a third of the 1.4 million Internet users in Brazil have made purchases through this site. To enhance customer service, Submarino has diversified into offering logistical and technological infrastructure to other retailers, which includes experience and expertise in credit analysis, tracking orders and product comparison systems.

### **3.7.3 Technology Forces**

The development of ICT is a key factor in the growth of e-commerce. For instance, technological advances in digitizing 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.

*Moreover, the principle of universal access can be made more achievable with convergence. At present the high costs of installing landlines in sparsely populated rural areas is a disincentive to telecommunications companies to install telephones in these areas. Installing landlines in rural areas can become more attractive to the private sector if revenues from these landlines are not limited to local and long distance telephone charges, but also include cable TV and Internet charges. This development will ensure affordable access to information even by those in rural areas and will spare the government the trouble and cost of installing expensive landlines.*

### **3.8 What are the Components of a Typical Successful E-Commerce Transaction Loop?**

E-commerce does not refer merely to a firm putting up a Web site 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 maximize 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 Web site 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 penalize 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.*

#### **4.0 CONCLUSION**

***Though several definitions have been advanced for e-commerce, but the basic component of any definition of e-commerce is that business is now done via electronic media. The concept will continue to evolve over time and will always be interwoven with like concepts such as e-business.***

#### **5.0 SUMMARY**

i. In the emerging global economy, e-commerce and e-business have increasingly become a necessary component of business strategy and a strong catalyst for economic development.

ii. 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.”

iii. While some use e-commerce and e-business interchangeably, they are distinct concepts. In e-commerce, information and communications technology (ICT) is used in inter-business or inter-organizational transactions (transactions between and among firms/organizations) and in business-to-consumer transactions (transactions between firms/organizations and individuals).

iv. Contemporary electronic commerce involves everything from ordering "digital" content for immediate online consumption, to ordering conventional goods and services, to "meta" services to facilitate other types of electronic commerce.

v. There are at least three major forces fuelling e-commerce: economic forces, marketing and customer interaction forces, and technology, particularly multimedia convergence.

vi. E-commerce does not refer merely to a firm putting up a Web site 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 maximize the benefits of e-commerce, a number of technical as well as enabling issues have to be considered.

## **6.0 TUTOR-MARKED ASSIGNMENT**

List ten business applications associated with e-commerce.

## **7.0 REFERENCES/FURTHER READINGS**

Anita Rosen (2000). *The E-commerce Question and Answer Book* (USA: American Management Association,).

MK, Euro Info Correspondence Centre (Belgrade, Serbia),  
“*E-commerce-Factor of Economic Growth.*”

Thomas L. Mesenbourg, *Measuring Electronic Business: Definitions, Underlying Concepts, and Measurement Plans.*

Definition adapted and expanded from Emmanuel Lallana, Rudy Quimbo, Zorayda Ruth Andam, ePrimer: *An Introduction to eCommerce* (Philippines: DAI-AGILE, 2000).

Lallana, Quimbo, Andam, 4. Cf. Ravi Kalakota and Andrew B. Whinston, (1997). *Electronic Commerce: A Manager's Guide* (USA: Addison Wesley Longman, Inc.

“E-commerce/Internet: B2B: 2B or Not 2B?” (Goldman Sachs Investment Research, November 1999), v. 1.1.

TA Project, “E-commerce”

Traderinasia.com; available from

<http://www.traderinasia.com/classifieds.html>;  
Internet; accessed 26 September 2002.

whatis.com, searchWebServices.com; available from <http://whatis.com/>

Michael Chait, “*Is the Dot-Com Bust Coming to an End?*” (July 8, 2002).

Reshma Kapadia, “*What Caused the Dot-Com Bust?*”

Reid Goldsborough, “*Viewpoint-Personal Computing: Forget the Dot-Com Bust, There's Still Money to Be Made.*”



whatis.com, searchEBusiness.com.

Lynda M. Applegate, (2002). *Excerpts form the E-business Handbook*, The St. Lucie Press.

Suganthi, Balachandher and Balachandran, “*Internet Banking Patronage: An Empirical Investigation of Malaysia;*”

Andrea Goldstein and David O’Connor, *E-commerce for Development: Prospects and Policy Issues*, (OECD Development Centre, September 2000).

Noah Elkin, “*Developing Countries Meeting e-business Challenge,*” February 5, 2003.

Emmanuel Lallana, Patricia J. Pascual, and Zorayda Ruth Andam, *SMEs and E-commerce: The Philippine Case*; Cf. *SMEs and E-commerce: The Case of Indonesia*, prepared for The Asia Foundation by Castle Asia.

Nancy Hafkin and Nancy Taggart, (June 2001). “*Gender, Information Technology, and Developing Countries: An Analytical Study.*”

Department of Trade and Communications. “*An Infocomms Policy for the Information Economy: A Consultative Paper,*” December 2000.

Lallana, Pascual and Andam; Cf. *SMEs and E-commerce: The Case of Indonesia*.



## UNIT 2 TYPES AND BENEFITS OF E-COMMERCE

### CONTENTS

- 1.0 Introduction
- 2.0 Objectives
- 3.0 Main Content
  - 3.1 What is B2B E-Commerce?
    - 3.1.1 Benefits of B2B E-Commerce
      - 3.1.1.1 Transaction Costs
      - 3.1.1.2 Disintermediation
      - 3.1.1.3 Transparency in Pricing
      - 3.1.1.4 Economies of Scale and Network Effects
  - 3.2 What is B2C E-Commerce?
  - 3.3 What is B2G E-Commerce?
  - 3.4 What is C2C E-Commerce?
  - 3.5 What is M-Commerce?
  - 3.6 *Advantages of E-Commerce for Businesses?*
  - 3.7 *How is E-Commerce Helpful to the Consumer?*
  - 3.8 *How are Business Relationships Transformed through E-Commerce?*
- 4.0 Conclusion
- 5.0 Summary
- 6.0 Tutor-Marked Assignment
- 7.0 References/Further Readings

### 1.0 INTRODUCTION

*The major different types of e-commerce are: business-to-business (B2B); business-to-consumer (B2C); business-to-government (B2G); consumer-to-consumer (C2C); and mobile commerce (m-commerce).*

### 2.0 OBJECTIVES

At the end of this unit the student is expected to:

- identify, define and differentiate the various forms of e-commerce
- know the benefits associated with e-commerce
- answer the question of how e-commerce is valuable to consumers
- know how to transform business relationships through e-commerce.

### 3.0 MAIN CONTENT

#### 3.1 What is 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. Efrastructure 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 Web site content management and delivery (e.g., Interwoven and ProcureNet); and
- Web-based commerce enablers (e.g., Commerce One, a browser-based, XML-enabled purchasing automation software).

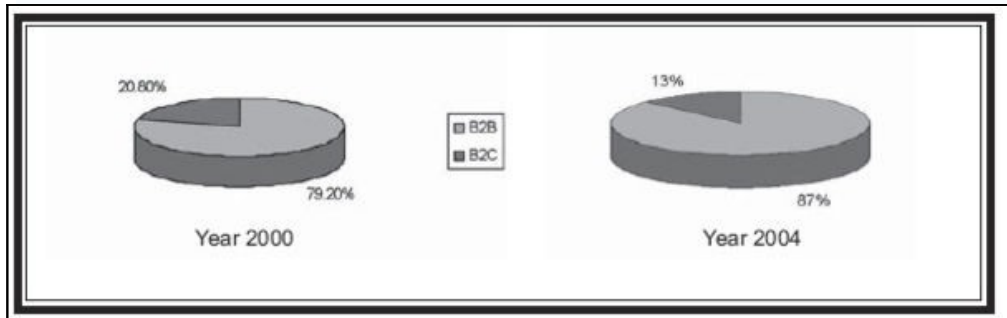
E-markets are simply defined as Web sites where buyers and sellers interact with each other and conduct transactions.

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).

eMarketer projects an increase in the share of B2B e-commerce in total global e-commerce from 79.2% in 2000 to 87% in 2004 and a consequent decrease in the share of B2C e-commerce from 20.8% in 2000 to only 13% in 2004 (Figure 1).

**Figure 1: Share of B2B and B2C E-Commerce in Total Global E-Commerce (2000 and 2004)**



Likewise B2B growth is way ahead of B2C growth in the Asia-Pacific region. According to a 2001 eMarketer estimate, B2B revenues in the region are expected to exceed \$300 billion by 2004.

Table 1 shows the projected size of B2B e-commerce by region for the years 2000-2004.

**Table 1: Projected B2B E-Commerce by Region, 2000-2004 (\$billions)**

	2000	2001	2002	2003	2004	As a % of worldwide B2B commerce, 2004
North America	159.2	316.8	563.9	964.3	1,600.8	57.7
Asia/Pacific Rim	36.2	68.6	121.2	199.3	300.6	10.8
Europe	26.2	52.4	132.7	334.1	797.3	28.7
Latin America	2.9	7.9	17.4	33.6	58.4	2.1
Africa/Middle East	1.7	3.2	5.9	10.6	17.7	0.6
TOTAL	226.2	448.9	841.1	1,541.9	2,774.8	100.0

### Box 1: Benefits of B2B E-Commerce in Developing Markets

#### 3.1.1 Benefits of B2B E-Commerce

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

### **3.1.1.1 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.

### **3.1.1.2 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.

### **3.1.1.3 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 emarketplace, the requirements of both buyers and sellers are thus aggregated to reach competitive prices, which are lower than those resulting from individual actions.

### **3.1.1.3 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.

## **3.2 What is 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 digitized 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).

eMarketer estimates that worldwide B2C e-commerce revenues will increase from US\$59.7 billion in 2000 to US\$428.1 billion by 2004. Online retailing transactions make up a significant share of this market. eMarketer also estimates that in the Asia-Pacific region, B2C revenues, while registering a modest figure compared to B2B, nonetheless went up to \$8.2 billion by the end of 2001, with that figure doubling at the end of 2002-at total worldwide B2C sales below 10%.

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 Web site 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.

### **3.3 What is 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 reduces 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.

### **3.4 What is C2C E-Commerce?**

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

This type of e-commerce is characterized 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; and
- 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. A concrete example of this when competing airlines gives a traveler best travel and ticket offers in response to the traveler's post that she wants to fly from New York to San Francisco.

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.

### 3.5 What is M-Commerce?

M-commerce (mobile commerce) is the buying and selling of goods and services through wireless technology-i.e., handheld devices such as cellular telephones and personal digital assistants (PDAs). Japan is seen as a global leader in m-commerce.

As content delivery over wireless devices becomes faster, more secure, and scalable, some believe that m-commerce will surpass wireline e-commerce as the method of choice for digital commerce transactions. This may well be true for the Asia-Pacific where there are more mobile phone users than there are Internet users.

Industries affected by m-commerce include:

- **Financial services:** including mobile banking (when customers use their handheld devices to access their accounts and pay their bills), as well as brokerage services (in which stock quotes can be displayed and trading conducted from the same handheld device);
- **Telecommunications:** in which service changes, bill payment and account reviews can all be conducted from the same handheld device;
- **Service/retail:** as consumers are given the ability to place and pay for orders on-the-fly; and
- **Information services:** which include the delivery of entertainment, financial news, sports figures and traffic updates to a single mobile device.

Forrester Research predicts US\$3.4 billion sales closed using PDA and cell phones by 2005 (See Table 2).



**Table 2: Forrester's M-Commerce Sales Predictions, 2001-2005**

Device	2001	2002	2003	2004	2005
Sales closed on devices (in billions)					
PDA	0.0	0.1	0.5	1.4	3.1
Cell phone	0.0	0.0	0.0	0.1	0.3
Sales influenced by devices (in billions)					
PDA	1.0	5.6	14.4	20.7	24.0
Cell Phone	0.0	0.0	0.1	0.3	1.3

### 3.6 *Advantages of E-Commerce for Businesses?*

**E-commerce serves as an “equalizer”.** It enables start-up and small- and medium-sized enterprises to reach the global market.

#### **Case 1: Leveling the Playing Field through E-commerce: The Case of Amazon.com**

Amazon.com is a virtual bookstore. It does not have a single square foot of bricks and mortar retail floor space. Nonetheless, Amazon.com is posting an annual sales rate of approximately \$1.2 billion, equal to about 235 Barnes & Noble (B&N) superstores. Due to the efficiencies of selling over the Web, Amazon has spent only \$56 million on fixed assets, while B&N has spent about \$118 million for 235 superstores. (To be fair, Amazon has yet to turn a profit, but this does not obviate the point that in many industries doing business through e-commerce is cheaper than conducting business in a traditional brick-and-mortar company.)

However, this does not discount the point that without a good e-business strategy, e-commerce may in some cases discriminate against SMEs because it reveals proprietary pricing information. A sound e-business plan does not totally disregard old economy values. The dot-com bust is proof of this.

#### **Case 2: Lessons from the Dot Com Frenzy**

According to Webmergers.com statistics, about 862 dot-com companies have failed since the height of the dot-com bust in January 2000. Majority of these were ecommerce and content companies. The shutdown of these companies was followed by the folding up of Internet-content providers, infrastructure companies, Internet service providers, and other providers of dial-up and broadband Internet-access services.



From the perspective of the investment banks, the dot-com frenzy can be likened to a gamble where the big money players were the venture capitalists and those laying their bets on the table were the small investors. The bust was primarily caused by the players' unfamiliarity with the sector, coupled with failure to cope with the speed of the Internet revolution and the amount of capital in circulation.

Internet entrepreneurs set the prices of their goods and services at very low levels to gain market share and attract venture capitalists to infuse funding. The crash began when investors started demanding hard earnings for sky-high valuations. The Internet companies also spent too much on overhead before even gaining a market share.

**E-commerce makes “mass customization” possible.** E-commerce applications in this area include easy-to-use ordering systems that allow customers to choose and order products according to their personal and unique specifications. For instance, a car manufacturing company with an e-commerce strategy allowing for online orders can have new cars built within a few days (instead of the several weeks it currently takes to build a new vehicle) based on customer's specifications. This can work more effectively if a company's manufacturing process is advanced and integrated into the ordering system.

**E-commerce allows “network production.”** This refers to the parceling out of the production process to contractors who are geographically dispersed but who are connected to each other via computer networks. The benefits of network production include: reduction in costs, more strategic target marketing, and the facilitation of selling add-on products, services, and new systems when they are needed. With network production, a company can assign tasks within its non-core competencies to factories all over the world that specialize in such tasks (e.g., the assembly of specific components).

#### **4.0 CONCLUSION**

*There are indeed several forms of e-commerce and there is the likelihood that there will be more in time to come. We need not be bothered much by the types of e-commerce, but its relevance to business. The impacts of e-commerce to business are obvious and more benefits will be seen as more businesses and organizations begin to embrace e-commerce.*

## 5.0 SUMMARY

i. *The major different types of e-commerce are: business-to-business (B2B); business-to-consumer (B2C); business-to-government (B2G); consumer-to-consumer (C2C); and mobile commerce (m-commerce).*

ii. The impact of B2B markets on the economy of developing countries is evident.

iii. 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 digitized content, such as software, or e-books); and, for information goods, receiving products over an electronic network.

iv. 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.

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

vi. M-commerce (mobile commerce) is the buying and selling of goods and services through wireless technology-i.e., handheld devices such as cellular telephones and personal digital assistants (PDAs). Japan is seen as a global leader in m-commerce.

vii. Internet entrepreneurs set the prices of their goods and services at very low levels to gain market share and attract venture capitalists to infuse funding

## 6.0 TUTOR-MARKED ASSIGNMENT

1. Briefly discuss the industries affected by m-commerce.
2. Mention five components of the architecture of Business-to-Business form of e-commerce.

## 7.0 REFERENCES/FURTHER READINGS

Anita Rosen (2000). *The E-commerce Question and Answer Book* (USA: American Management Association,).

MK, Euro Info Correspondence Centre (Belgrade, Serbia),  
“*E-commerce-Factor of Economic Growth.*”

Thomas L. Mesenbourg, *Measuring Electronic Business: Definitions, Underlying Concepts, and Measurement Plans.*

Definition adapted and expanded from Emmanuel Lallana, Rudy Quimbo, Zorayda Ruth Andam, ePrimer: *An Introduction to eCommerce* (Philippines: DAI-AGILE, 2000).

Lallana, Quimbo, Andam, 4. Cf. Ravi Kalakota and Andrew B. Whinston, (1997). *Electronic Commerce: A Manager's Guide* (USA: Addison Wesley Longman, Inc.

“E-commerce/Internet: B2B: 2B or Not 2B?” (Goldman Sachs Investment Research, November 1999), v. 1.1.

TA Project, “E-commerce”

Traderinasia.com; available from

<http://www.traderinasia.com/classifieds.html>;  
Internet; accessed 26 September 2002.

whatis.com, searchWebServices.com; available from <http://whatis.com/>

Michael Chait, “*Is the Dot-Com Bust Coming to an End?*” (July 8, 2002).

Reshma Kapadia, “*What Caused the Dot-Com Bust?*”

Reid Goldsborough, “*Viewpoint-Personal Computing: Forget the Dot-Com Bust, There's Still Money to Be Made.*”

whatis.com, searchEBusiness.com.

Lynda M. Applegate, (2002). *Excerpts form the E-business Handbook*, The St. Lucie Press.

Suganthi, Balachandher and Balachandran, “*Internet Banking Patronage: An Empirical Investigation of Malaysia.*”

Andrea Goldstein and David O'Connor, *E-commerce for Development: Prospects and Policy Issues*, (OECD Development Centre, September 2000).

Noah Elkin, “*Developing Countries Meeting e-business Challenge*,” February 5, 2003.

Emmanuel Lallana, Patricia J. Pascual, and Zorayda Ruth Andam, *SMEs and E-commerce: The Philippine Case*; Cf. *SMEs and E-commerce: The Case of Indonesia*, prepared for The Asia Foundation by Castle Asia.

Nancy Hafkin and Nancy Taggart, (June 2001). “*Gender, Information Technology, and Developing Countries: An Analytical Study*.”

Department of Trade and Communications. “*An Infocomms Policy for the Information Economy: A Consultative Paper*,” December 2000.

Lallana, Pascual and Andam; Cf. *SMEs and E-commerce: The Case of Indonesia*.

## UNIT 3 APPLICATIONS AND USE IN PAYMENT SYSTEMS

### CONTENTS

- 1.0 Introduction
- 2.0 Objectives
- 3.0 **Main Content**
  - 3.1 *How is E-Commerce Helpful to the Consumer*
  - 3.2 *How are Business Relationships Transformed through E-Commerce*
  - 3.3 *How does E-commerce Link Customers, Workers, Suppliers, Distributors and Competitors*
  - 3.4 *What are the Relevant Components of an E-commerce Model?*
  - 3.5 *What are the Existing Practices in Developing Countries with Respect to Buying and Paying Online?*
    - 3.5.1 *Traditional Payment Methods*
    - 3.5.2 *Electronic Payment Methods*
  - 3.6 *What is an Electronic Payment System? Why is it Important?*
  - 3.7 *E-Banking*
  - 3.8 *E-Tailing*
  - 3.9 *What is Online Publishing? What are its Most Common Applications?*
- 4.0 Conclusion
- 5.0 Summary
- 6.0 Tutor-Marked Assignment
- 7.0 References/Further Readings

### 1.0 INTRODUCTION

Various applications of e-commerce are continually affecting trends and prospects for business over the Internet, including e-banking, e-tailing and online publishing/online retailing.

A more developed and mature e-banking environment plays an important role in e-commerce by encouraging a shift from traditional modes of payment (i.e., cash, checks or any form of paper-based legal tender) to electronic alternatives (such as e-payment systems), thereby closing the e-commerce loop.

## 2.0 OBJECTIVES

At the end of this unit the student is expected to:

- answer the question of the extent to which e-commerce helps consumers
- have an idea how business relationships can be transformed by e-commerce
- differentiate traditional forms of doing business from the new way of doing business electronically
- know the basic components of e-commerce models
- define electronic form of payment and its importance
- know some applications e-commerce in banking and shopping.

### 3.1 *How is E-Commerce Helpful to the Consumer?*

In C2B transactions, customers/consumers are given more influence over what and how products are made and how services are delivered, thereby broadening consumer choices. E-commerce allows for a faster and more open process, with customers having greater control.

E-commerce makes information on products and the market as a whole readily available and accessible, and increases price transparency, which enable customers to make more appropriate purchasing decisions.

### 3.2 *How are Business Relationships Transformed through E-Commerce?*

E-commerce transforms old economy relationships (vertical/linear relationships) to new economy relationships characterized by end-to-end relationship management solutions (integrated or extended relationships).

### 3.3 *How does E-commerce Link Customers, Workers, Suppliers, Distributors and Competitors?*

E-commerce facilitates organization networks, wherein small firms depend on “partner” firms for supplies and product distribution to address customer demands more effectively.

To manage the chain of networks linking customers, workers, suppliers, distributors, and even competitors, an integrated or extended supply chain management solution is needed. *Supply chain management* (SCM) is defined as the supervision of materials, information, and finances as they move from supplier to manufacturer to wholesaler to retailer to consumer. It involves the coordination and integration of these flows

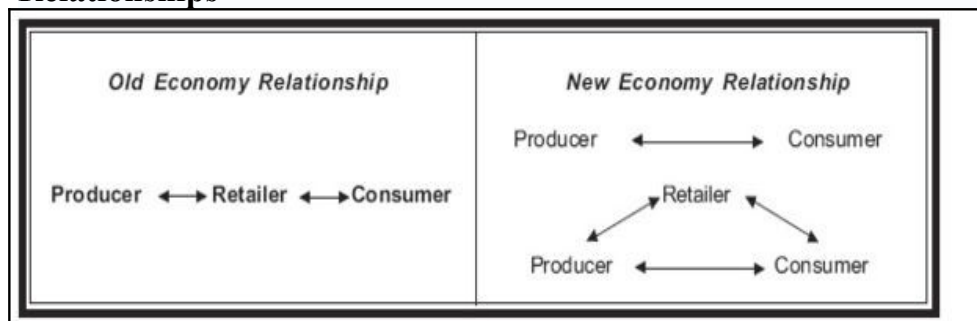
both within and among companies. The goal of any effective supply chain management system is timely provision of goods or services to the next link in the chain (and ultimately, the reduction of inventory within each link).

There are three main flows in SCM, namely:

- The product flow, which includes the movement of goods from a supplier to a customer, as well as any customer returns or service needs;
- The information flow, which involves the transmission of orders and the update of the status of delivery; and
- The finances flow, which consists of credit terms, payment schedules, and consignment and title ownership arrangements.

Some SCM applications are based on open data models that support the sharing of data both inside and outside the enterprise, called the extended enterprise, and includes key suppliers, manufacturers, and end customers of a specific company. Shared data resides in diverse database systems, or data warehouses, at several different sites and companies. Sharing this data “upstream” (with a company’s suppliers) and “downstream” (with a company’s clients) allows SCM applications to improve the time-to-market of products and reduce costs. It also allows all parties in the supply chain to better manage current resources and plan for future needs.

**Figure 1: Old Economy Relationships vs. New Economy Relationships**



### 3.4 What are the Relevant Components of an E-Commerce Model?

An e-business e-commerce model must have:

1. **A shared digital business infrastructure**, including digital production and distribution technologies (broadband/wireless networks, content creation technologies and information

- management systems), which will allow business participants to create and utilize network economies of scale and scope;
2. **A sophisticated model for operations**, including integrated value chains-both supply chains and buy chains;
  3. **An e-business management model**, consisting of business teams and/or partnerships; and
  4. **Policy, regulatory and social systems**-i.e., business policies consistent with e-commerce laws, teleworking/virtual work, distance learning, incentive schemes, among others.

### **Case 1: Dawson's Antiques and Sotheby's: A Case of Creative Positioning of an E-Business Strategy**

Dawson's Antiques is a 23-year-old small antique business. With the emergence of online auction sites, the owner, Linda Dawson, foresaw the need not only to accommodate the Internet in their business strategy but also to take advantage of it in order to survive as a business. This came with the recognition that many of her clients were exposed to a wide range of antiques from competitors at online auction sites at prices lower than she was charging.

Meanwhile, Sotheby's, then a growing online auction site (and now one of the largest online auction sites), realized the merit of increasing its auction inventory to attract a bigger audience on the Internet. It revised its Internet strategy by opening its Web site, sothebys.com, to smaller dealers and auction sites instead of competing directly with its competitors in the online auction business. With this approach, Sotheby experienced an exponential growth in its inventory, which attracted a bigger market.

Dawson's enlistment in Sotheby's was instrumental in expanding its client base. To make things easier, Sotheby's not only provided the Web site for its members (Dawson's included) but also arranged to handle all billing and collection. Under the new strategy, Sotheby's enlisted 4,660 members, which translated to an expansion of its auction inventory by five times the previous average stock or about 5,000 lots per week. For Dawson, e-business sales accounted for 25% of total sales in mid-2000 and 50% in January 2001.

### **3.5 *What are the Existing Practices in Developing Countries with Respect to Buying and Paying Online?***

In most developing countries, the payment schemes available for online transactions are the following:



### 3.5.1 Traditional Payment Methods

- **Cash-on-delivery.** Many online transactions only involve submitting purchase orders online. Payment is by cash upon the delivery of the physical goods.
- **Bank payments.** After ordering goods online, payment is made by depositing cash into the bank account of the company from which the goods were ordered. Delivery is likewise done the conventional way.

### 3.5.2 Electronic Payment Methods

- **Innovations affecting consumers,** include credit and debit cards, automated teller machines (ATMs), stored value cards, and e-banking.
- **Innovations enabling online commerce** are e-cash, e-checks, smart cards, and encrypted credit cards. These payment methods are not too popular in developing countries. They are employed by a few large companies in specific secured channels on a transaction basis.
- **Innovations affecting companies** pertain to payment mechanisms that banks provide their clients, including inter-bank transfers through automated clearing houses allowing payment by direct deposit.

### 3.6 *What is an Electronic Payment System? Why is it Important?*

An electronic payment system (EPS) is a system of financial exchange between buyers and sellers in the online environment that is facilitated by a digital financial instrument (such as encrypted credit card numbers, electronic checks, or digital cash) backed by a bank, an intermediary, or by legal tender.

EPS plays an important role in e-commerce because it closes the e-commerce loop. In developing countries, the underdeveloped electronic payments system is a serious impediment to the growth of e-commerce. In these countries, entrepreneurs are not able to accept credit card payments over the Internet due to legal and business concerns. The primary issue is transaction security.

The absence or inadequacy of legal infrastructures governing the operation of e-payments is also a concern. Hence, banks with e-banking operations employ service agreements between themselves and their clients.

The relatively undeveloped credit card industry in many developing countries is also a barrier to e-commerce. Only a small segment of the

population can buy goods and services over the Internet due to the small credit card market base. There is also the problem of the requirement of “explicit consent” (i.e., a signature) by a card owner before a transaction is considered valid—a requirement that does not exist in the U.S. and in other developed countries.

### **What is the confidence level of consumers in the use of an EPS?**

Many developing countries are still cash-based economies. Cash is the preferred mode of payment not only on account of security but also because of anonymity, which is useful for tax evasion purposes or keeping secret what one’s money is being spent on. For other countries, security concerns have a lot to do with a lack of a legal framework for adjudicating fraud and the uncertainty of the legal limit on the liability associated with a lost or stolen credit card.

In sum, among the relevant issues that need to be resolved with respect to EPS are: consumer protection from fraud through efficiency in record-keeping; transaction privacy and safety, competitive payment services to ensure equal access to all consumers, and the right to choice of institutions and payment methods. Legal frameworks in developing countries should also begin to recognize electronic transactions and payment schemes.

## **3.7 E-Banking**

E-banking includes familiar and relatively mature electronically-based products in developing markets, such as telephone banking, credit cards, ATMs, and direct deposit. It also includes electronic bill payments and products mostly in the developing stage, including stored-value cards (e.g., smart cards/smart money) and Internet-based stored value products.

### **Payment Methods and Security Concerns: The Case of China**

In China, while banks issue credit cards and while many use debit cards to draw directly from their respective bank accounts, very few people use their credit cards for online payment. Cash-on-delivery is still the most popular mode of e-commerce payment. Nonetheless, online payment is gaining popularity because of the emergence of Chinapay and Cyber Beijing, which offer a city-wide online payment system.

### **What is the status of e-banking in developing countries?**

E-banking in developing countries is in the early stages of development. Most banking in developing countries is still done the conventional way. However, there is an increasing growth of online banking, indicating a promising future for online banking in these countries. Below is a broad picture of e-banking in three ASEAN countries.

### **The Philippine Experience**

In the Philippines, Citibank, Bank of the Philippine Islands (BPI), Philippine National Bank, and other large banks pioneered e-banking in the early 1980s. Interbank networks in the country like Megalink, Bancnet, and BPI Expressnet were among the earliest and biggest starters of ATM (Automated Teller Machines) technology.

BPI launched its BPI Express Online in January 2000. The most common online financial services include deposits, fund transfers, applications for new accounts, Stop Payment on issued checks, housing and auto loans, credit cards, and remittances.

### **The Singapore Experience**

In Singapore, more than 28% of Internet users visited e-banking sites in May 2001. Research by NetValue (an Internet measurement company) shows that while the number of people engaging in online banking in Singapore has increased, the average time spent at sites decreased by approximately four minutes from March 2001 to May 2001. This decline can be attributed to the fact that more visitors spend time completing transactions, which take less time than browsing different sites. According to the survey, two out of three visitors make a transaction. All major banks in Singapore have an Internet presence. They offer a wide range of products directly to consumers through proprietary Internet sites. These banks have shifted from an initial focus on retail-banking to SME and corporate banking products and services.

Among the products offered are:

- Fund transfer and payment systems;
- Integrated B2B e-commerce product, involving product selection, purchase order, invoice generation and payment;
- Securities placement and underwriting and capital market activities;
- Securities trading; and
- Retail banking.

### **The Malaysian Experience**

E-banking in Malaysia emerged in 1981 with the introduction of ATMs. This was followed by tele-banking in the early 1990s where telecommunications devices were connected to an automated system through the use of Automated Voice Response (AVR) technology. Then came PC banking or desktop banking using proprietary software, which was more popular among corporate customers than retail customers.

On June 1, 2000, the Malaysian Bank formally allowed local commercial banks to offer Internet banking services. On June 15, 2000, Maybank ([www.maybank2U.com](http://www.maybank2U.com)), one of the largest banks in Malaysia, launched the country's first Internet banking services. The bank employs 128-bit encryption technology to secure its transactions. Other local banks in Malaysia offering e-banking services are Southern Bank, Hong Leong Bank, HSBC Bank, Multi-Purpose Bank, Phileo Allied Bank and RHB Bank. Banks that offer WAP or Mobile banking are OCBC Bank, Phileo Allied Bank and United Overseas Bank.

The most common e-banking services include banking inquiry functions, bill payments, credit card payments, fund transfers, share investing, insurance, travel, electronic shopping, and other basic banking services.

### **What market factors, obstacles, problems and issues are affecting the growth of e-banking in developing countries?**

Human tellers and automated teller machines continue to be the banking channels of choice in developing countries. Only a small number of banks employ Internet banking. Among the middle- and high-income people in Asia questioned in a McKinsey survey, only 2.6% reported banking over the Internet in 2000. In India, Indonesia, and Thailand, the figure was as low as 1%; in Singapore and South Korea, it ranged from 5% to 6%. In general, Internet banking accounted for less than 0.1% of these customers' banking transactions, as it did in 1999. The Internet is more commonly used for opening new accounts but the numbers are negligible as less than 0.3% of respondents used it for that purpose, except in China and the Philippines where the figures climbed to 0.7 and 1.0%, respectively.

This slow uptake cannot be attributed to limited access to the Internet since 42% of respondents said they had access to computers and 7% said they had access to the Internet. The chief obstacle in Asia and throughout emerging markets is security. This is the main reason for not opening online banking or investment accounts. Apparently, there is also a preference for personal contact with banks.

Access to high-quality products is also a concern. Most Asian banks are in the early stages of Internet banking services, and many of the services are very basic.

### **What are the trends and prospects for e-banking in these countries?**

There is a potential for increased uptake of e-banking in Asia. Respondents of the McKinsey survey gave the following indications:

1. **Lead users:** 38% of respondents indicated their intention to open an online account in the near future. These lead users undertake one-third more transactions a month than do other users, and they tend to employ all banking channels more often.
2. **Followers:** An additional 20% showed an inclination to eventually open an online account, if their primary institution were to offer it and if there would be no additional bank charges.
3. **Rejecters:** 42% (compared to the aggregate figure of 58% for lead users and followers) indicated no interest in or an aversion to Internet banking. It is important to note that these respondents also preferred consolidation and simplicity, i.e., owning fewer banking products and dealing with fewer financial institutions.

Less than 13% of the lead users and followers indicated some interest in conducting complex activities over the Internet, such as trading securities or applying for insurance, credit cards, and loans. About a third of lead users and followers showed an inclination to undertake only the basic banking functions, like ascertaining account balances and transferring money between accounts, over the Internet.

### **3.8 E-Tailing**

E-tailing (or electronic retailing) is the selling of retail goods on the Internet. It is the most common form of business-to-consumer (B2C) transaction.

#### **E-Tailing: Pioneering Trends in E-Commerce**

The year 1997 is considered the first big year for e-tailing. This was when Dell Computer recorded multimillion dollar orders taken at its Web site. Also, the success of Amazon.com (which opened its virtual doors in 1996) encouraged Barnes & Noble to open an e-tail site. Security concerns over taking purchase orders over the Internet gradually receded. In the same year, Auto-by-Tel sold its millionth car over the Web, and CommerceNet/Nielsen Media recorded that 10 million people had made purchases on the Web.

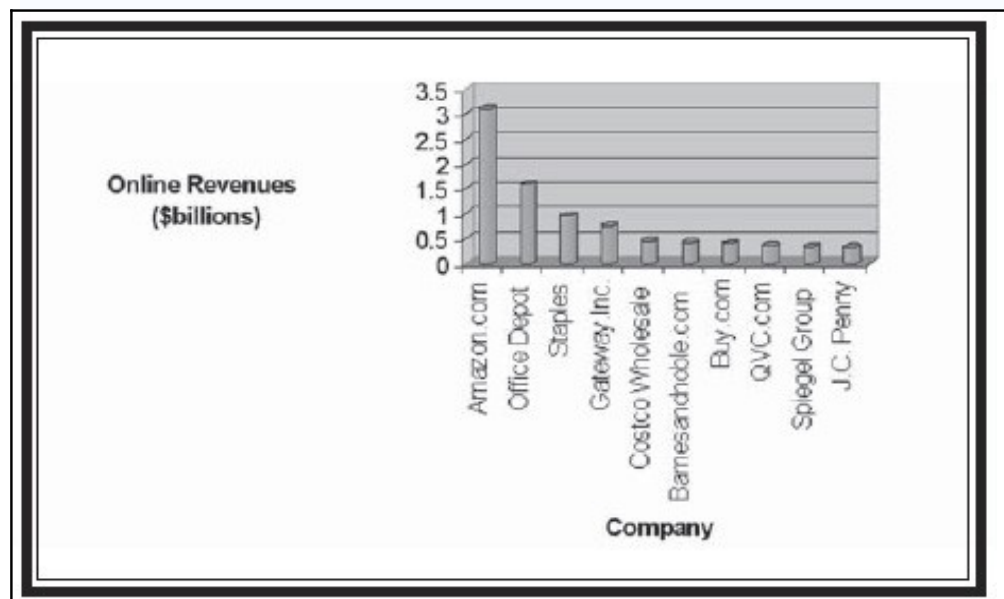
## SELF-ASSESSMENT EXERCISE 1

What are the trends and prospects for e-tailing?

Jupiter projects that e-tailing will grow to \$37 billion by 2002. Another estimate is that the online market will grow 45% in 2001, reaching \$65 billion. Profitability will vary sharply between Web-based, catalog-based and store-based retailers. There was also a marked reduction in customer acquisition costs for all online retailers from an average of \$38 in 1999 to \$29 in 2000.

An e-retail study conducted by Retail Forward showed that eight of its top 10 e-retailers<sup>40</sup> were multi-channel—that is, they do not rely on online selling alone. Figure 7 shows the top 10 e-tailers by revenues generated online for the year 2001.

**Figure 2: Top 10 E-Retailers**



In addition, a study by the Boston Consulting Group and Shop.org revealed that the multi-channel retail market in the U.S. expanded by 72% from 1999 to 2002, vis-à-vis a compounded annual growth rate of 67.8% for the total online market for the years 1999-2002.

### 3.9 *What is Online Publishing? What are its Most Common Applications?*

Online publishing is the process of using computer and specific types of software to combine text and graphics to produce Web-based documents such as newsletters, online magazines and databases, brochures and

other promotional materials, books, and the like, with the Internet as a medium for publication.

## **SELF-ASSESSMENT EXERCISE 2**

What are the benefits and advantages of online publishing to business?

Among the benefits of using online media are low-cost universal access, the independence of time and place, and ease of distribution. These are the reasons why the Internet is regarded as an effective marketing outreach medium and is often used to enhance information service.

## **SELF-ASSESSMENT EXERCISE 3**

What are the problems and issues in online publishing?

The problems in online publishing can be grouped into two categories: management challenges and public policy issues.

There are two major management issues:

The *profit question*, which seeks to address how an online presence can be turned into a profitable one and what kind of business model would result in the most revenue; and

The *measurement issue*, which pertains to the effectiveness of a Web site and the fairness of charges to advertisers.

The most common public policy issues have to do with copyright protection and censorship. Many publishers are prevented from publishing online because of inadequate copyright protection. An important question to be addressed is: How can existing copyright protections in the print environment be mapped onto the online environment? Most of the solutions are technological rather than legal. The more common technological solutions include encryption for paid subscribers, and information usage meters on add-in circuit boards and sophisticated document headers that monitor the frequency and manner by which text is viewed and used.

In online marketing, there is the problem of unsolicited commercial e-mail or “spam mail.” Junk e-mail is not just annoying; it is also costly. Aside from displacing normal and useful e-mail, the major reason why spam mail is a big issue in online marketing is that significant costs are shifted from the sender of such mail to the recipient. Sending bulk junk e-mail is a lot cheaper compared to receiving the same. Junk e-mail



consumes bandwidth (which an ISP purchases), making Internet access clients slower and thereby increasing the cost of Internet use.

#### **4.0 CONCLUSION**

*The applications of e-commerce are varied and cuts across several sectors of business and governance. Of particular significance is its application in payments in financial transactions. This has led to the growing in the number of electronic payment systems all over the world. In fact, e-payment systems are big business in itself now. Its applications in banking and shopping has boost business in these sectors.*

#### **5.0 SUMMARY**

i. Various applications of e-commerce are continually affecting trends and prospects for business over the Internet, including e-banking, e-tailing and online publishing/online retailing.

ii. In C2B transactions, customers/consumers are given more influence over what and how products are made and how services are delivered, thereby broadening consumer choices. E-commerce allows for a faster and more open process, with customers having greater control.

iii. E-commerce transforms old economy relationships (vertical/linear relationships) to new economy relationships characterized by end-to-end relationship management solutions (integrated or extended relationships).

iv. E-commerce facilitates organization networks, wherein small firms depend on “partner” firms for supplies and product distribution to address customer demands more effectively.

v. An electronic payment system (EPS) is a system of financial exchange between buyers and sellers in the online environment that is facilitated by a digital financial instrument (such as encrypted credit card numbers, electronic checks, or digital cash) backed by a bank, an intermediary, or by legal tender.

vi. E-banking includes familiar and relatively mature electronically-based products in developing markets, such as telephone banking, credit cards, ATMs, and direct deposit.

vii. In the Philippines, Citibank, Bank of the Philippine Islands (BPI), Philippine National Bank, and other large banks pioneered e-banking in the early 1980s.



viii. The most common e-banking services include banking inquiry functions, bill payments, credit card payments, fund transfers, share investing, insurance, travel, electronic shopping, and other basic banking services.

ix. E-tailing (or electronic retailing) is the selling of retail goods on the Internet. It is the most common form of business-to-consumer (B2C) transaction.

x. Online publishing is the process of using computer and specific types of software to combine text and graphics to produce Web-based documents such as newsletters, online magazines and databases, brochures and other promotional materials, books, and the like, with the Internet as a medium for publication.

## **6.0 TUTOR-MARKED ASSIGNMENT**

1. *List five types of products offered by e-banking.*
2. *Discuss briefly the components of e-commerce/e-business models.*

## **7.0 REFERENCES/FURTHER READINGS**

Anita Rosen (2000). *The E-commerce Question and Answer Book* (USA: American Management Association).

MK, Euro Info Correspondence Centre (Belgrade, Serbia), *"E-commerce-Factor of Economic Growth."*

Thomas L. Mesenbourg, *Measuring Electronic Business: Definitions, Underlying Concepts, and Measurement Plans.*

Definition adapted and expanded from Emmanuel Lallana, Rudy Quimbo, Zorayda Ruth Andam, ePrimer: *An Introduction to eCommerce* (Philippines: DAI-AGILE, 2000).

Lallana, Quimbo, Andam, 4. Cf. Ravi Kalakota and Andrew B. Whinston, (1997). *Electronic Commerce: A Manager's Guide* (USA: Addison Wesley Longman, Inc.

"E-commerce/Internet: B2B: 2B or Not 2B?" (Goldman Sachs Investment Research, November 1999), v. 1.1.

TA Project, "E-commerce"

Traderinasia.com; available from

<http://www.traderinasia.com/classifieds.html>;  
Internet; accessed 26 September 2002.

whatis.com, searchWebServices.com; available from <http://whatis.com/>

Michael Chait, *"Is the Dot-Com Bust Coming to an End?"* (July 8, 2002).

Reshma Kapadia, *"What Caused the Dot-Com Bust?"*

Reid Goldsborough, *"Viewpoint-Personal Computing: Forget the Dot-Com Bust, There's Still Money to Be Made"*

whatis.com, searchEBusiness.com.

Lynda M. Applegate, (2002). *Excerpts form the E-business Handbook*, The St. Lucie Press.

Suganthi, Balachandher and Balachandran, *"Internet Banking Patronage: An Empirical Investigation of Malaysia"*

Andrea Goldstein and David O'Connor, *E-commerce for Development: Prospects and Policy Issues*, (OECD Development Centre, September 2000).

Noah Elkin, *"Developing Countries Meeting e-business Challenge,"* February 5, 2003.

Emmanuel Lallana, Patricia J. Pascual, and Zorayda Ruth Andam, *SMEs and E-commerce: The Philippine Case*; Cf. *SMEs and E-commerce: The Case of Indonesia*, prepared for The Asia Foundation by Castle Asia.

Nancy Hafkin and Nancy Taggart, (June 2001). *"Gender, Information Technology, and Developing Countries: An Analytical Study."*

Department of Trade and Communications. *"An Infocomms Policy for the Information Economy: A Consultative Paper,"* December 2000.

Lallana, Pascual and Andam; Cf. *SMEs and E-commerce: The Case of Indonesia*.

## UNIT 4 INTERNET AND E-COMMERCE

### CONTENTS

- 1.0 Introduction
- 2.0 Objectives
- 3.0 **Main Content**
  - 3.1 ***How is the Internet Relevant to E-Commerce***
  - 3.2 Language
  - 3.3 Internet and the Workplace
  - 3.4 The Internet Viewed on Mobile Devices
  - 3.5 Common Uses
    - 3.5.1 E-mail
    - 3.5.2 The World Wide Web
    - 3.5.3 Remote Access
    - 3.5.4 Collaboration
    - 3.5.5 File Sharing
    - 3.5.6 Streaming Media
    - 3.5.7 Voice Telephony (VoIP)
  - 3.6 Internet Access
  - 3.7 Social Impact
  - 3.8 Leisure Activities
  - 3.9 Marketing
- 4.0 Conclusion
- 5.0 Summary
- 6.0 Tutor-Marked Assignment
- 7.0 References/Further Readings

### 1.0 INTRODUCTION

A specific internetwork, consisting of a worldwide interconnection of governmental, academic, public, and private networks based upon the Advanced Research Project Agency Network (ARPANET) developed by ARPA of the U.S. Department of Defense – also home to the World Wide Web (WWW) and referred to as the 'Internet' with a capital 'I' to distinguish it from other generic internetworks.

The Internet Corporation for Assigned Names and Numbers (ICANN) is the authority that coordinates the assignment of unique identifiers on the Internet, including domain names, Internet Protocol (IP) addresses, and protocol port and parameter numbers. A globally unified namespace (i.e., a system of names in which there is at most one holder for each possible name) is essential for the Internet to function. ICANN is headquartered in Marina del Rey, California, but is overseen by an international board of directors drawn from across the Internet technical, business, academic, and non-commercial communities. The US

government continues to have the primary role in approving changes to the root zone file that lies at the heart of the domain name system. Because the Internet is a distributed network comprising many voluntarily interconnected networks, the Internet has no governing body. ICANN's role in coordinating the assignment of unique identifiers distinguishes it as perhaps the only central coordinating body on the global Internet, but the scope of its authority extends only to the Internet's systems of domain names, IP addresses, protocol ports and parameter numbers.

On November 16, 2005, the World Summit on the Information Society, held in Tunis, established the Internet Governance Forum (IGF) to discuss Internet-related issues.

## **2.0 OBJECTIVES**

At the end of this unit the student is expected to:

- define what is Internet
- know how the Internet is relevant to e-commerce
- know what is the most common language in communicating over the Internet
- identify the various uses of the Internet
- answer the question of how to access the Internet
- know to what extent the Internet has impacted the social life of people
- understand the application of the Internet in marketing.

## **3.0 MAIN CONTENT**

### **3.1 *How is the Internet Relevant 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 utilized 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.

### 3.2 Language

The prevalent language for communication on the Internet is English. This may be a result of the Internet's origins, as well as English's role as a lingua franca. It may also be related to the poor capability of early computers, largely originating in the United States, to handle characters other than those in the English variant of the Latin alphabet.

After English (30% of Web visitors) the most requested languages on the World Wide Web are Chinese (17%), Spanish (9%), Japanese (7%), French (5%) and German (5%).

By continent, 38% of the world's Internet users are based in [Asia](#), 27% in [Europe](#), 18% in North America, 10% in Latin America and the Caribbean, and 7% in Australia.

The Internet's technologies have developed enough in recent years, especially in the use of Unicode, that good facilities are available for development and communication in most widely used languages. However, some glitches such as *mojibake* (incorrect display of foreign language characters, also known as *kryakozyabry*) still remain.

### 3.3 Internet and the Workplace

The Internet is allowing greater flexibility in working hours and location, especially with the spread of unmetered high-speed connections and Web applications.

### 3.4 The Internet Viewed on Mobile Devices

The Internet can now be accessed virtually anywhere by numerous means. Mobile phones, datacards, handheld game consoles and cellular routers allow users to connect to the Internet from anywhere there is a cellular network supporting that device's technology.

Within the limitations imposed by the small screen and other limited facilities of such a pocket-sized device, all the services of the Internet, including email and web browsing, may be available in this way. Service providers may restrict the range of these services and charges for data access may be significant, compared to home usage.

### 3.5 Common Uses

#### 3.5.1 E-mail

The concept of sending electronic text messages between parties in a way analogous to mailing letters or memos predates the creation of the Internet. Even today it can be important to distinguish between Internet and internal e-mail systems. Internet e-mail may travel and be stored unencrypted on many other networks and machines out of both the sender's and the recipient's control. During this time it is quite possible for the content to be read and even tampered with by third parties, if anyone considers it important enough. Purely internal or intranet mail systems, where the information never leaves the corporate or organization's network, are much more secure, although in any organization there will be IT and other personnel whose job may involve monitoring, and occasionally accessing, the e-mail of other employees not addressed to them.

#### 3.5.2 The World Wide Web

Many people use the terms *Internet* and *World Wide Web* (or just the *Web*) interchangeably, but, as discussed above, the two terms are not synonymous.

The World Wide Web is a huge set of interlinked documents, images and other resources, linked by hyperlinks and URLs. These hyperlinks and URLs allow the web servers and other machines that store originals, and cached copies, of these resources to deliver them as required using HTTP (Hypertext Transfer Protocol). HTTP is only one of the communication protocols used on the Internet.

Web services also use HTTP to allow software systems to communicate in order to share and exchange business logic and data.

Software products that can access the resources of the Web are correctly termed *user agents*. In normal use, web browsers, such as Internet Explorer and Firefox, access web pages and allow users to navigate from one to another via hyperlinks. Web documents may contain almost any combination of computer data including graphics, sounds, text, video, multimedia and interactive content including games, office applications and scientific demonstrations.

Through keyword-driven Internet research using search engines like Yahoo! and Google, millions of people worldwide have easy, instant access to a vast and diverse amount of online information. Compared to encyclopedias and traditional libraries, the World Wide Web has

enabled a sudden and extreme decentralization of information and data. Using the Web, it is also easier than ever before for individuals and organisations to publish ideas and information to an extremely large audience. Anyone can find ways to publish a web page, a blog or build a website for very little initial cost. Publishing and maintaining large, professional websites full of attractive, diverse and up-to-date information is still a difficult and expensive proposition, however.

Many individuals and some companies and groups use "web logs" or blogs, which are largely used as easily updatable online diaries. Some commercial organisations encourage staff to fill them with advice on their areas of specialization in the hope that visitors will be impressed by the expert knowledge and free information, and be attracted to the corporation as a result. One example of this practice is Microsoft, whose product developers publish their personal blogs in order to pique the public's interest in their work.

Collections of personal web pages published by large service providers remain popular, and have become increasingly sophisticated. Whereas operations such as Angelfire and GeoCities have existed since the early days of the Web, newer offerings from, for example, Facebook and MySpace currently have large followings. These operations often brand themselves as social network services rather than simply as web page hosts.

Advertising on popular web pages can be lucrative, and e-commerce or the sale of products and services directly via the Web continues to grow. In the early days, web pages were usually created as sets of complete and isolated HTML text files stored on a web server. More recently, websites are more often created using content management system (CMS) or wiki software with, initially, very little content. Contributors to these systems, who may be paid staff, members of a club or other organisation or members of the public, fill underlying databases with content using editing pages designed for that purpose, while casual visitors view and read this content in its final HTML form. There may or may not be editorial, approval and security systems built into the process of taking newly entered content and making it available to the target visitors.

### **3.5.3 Remote Access**

The Internet allows computer users to connect to other computers and information stores easily, wherever they may be across the world. They may do this with or without the use of security, authentication and encryption technologies, depending on the requirements.

This is encouraging new ways of working from home, collaboration and information sharing in many industries. An accountant sitting at home can audit the books of a company based in another country, on a server situated in a third country that is remotely maintained by IT specialists in a fourth. These accounts could have been created by home-working bookkeepers, in other remote locations, based on information e-mailed to them from offices all over the world. Some of these things were possible before the widespread use of the Internet, but the cost of private leased lines would have made many of them infeasible in practice.

An office worker away from his desk, perhaps on the other side of the world on a business trip or a holiday, can open a remote desktop session into his normal office PC using a secure Virtual Private Network (VPN) connection via the Internet. This gives the worker complete access to all of his or her normal files and data, including e-mail and other applications, while away from the office.

This concept is also referred to by some network security people as the Virtual Private Nightmare, because it extends the secure perimeter of a corporate network into its employees' homes; this has been the source of some notable security breaches, but also provides security for the workers.

### **3.5.4 Collaboration**

The low cost and nearly instantaneous sharing of ideas, knowledge, and skills has made collaborative work dramatically easier. Not only can a group cheaply communicate and test, but the wide reach of the Internet allows such groups to easily form in the first place, even among niche interests. An example of this is the free software movement in software development, which produced GNU and Linux from scratch and has taken over development of Mozilla and OpenOffice.org (formerly known as Netscape Communicator and StarOffice).

Internet "chat", whether in the form of IRC "chat rooms" or channels, or via instant messaging systems, allow colleagues to stay in touch in a very convenient way when working at their computers during the day. Messages can be sent and viewed even more quickly and conveniently than via e-mail. Extension to these systems may allow files to be exchanged, "whiteboard" drawings to be shared as well as voice and video contact between team members.

Version control systems allow collaborating teams to work on shared sets of documents without either accidentally overwriting each other's work or having members wait until they get "sent" documents to be able to add their thoughts and changes.



### **3.5.5 File Sharing**

A computer file can be e-mailed to customers, colleagues and friends as an attachment. It can be uploaded to a website or FTP server for easy download by others. It can be put into a "shared location" or onto a file server for instant use by colleagues. The load of bulk downloads to many users can be eased by the use of "mirror" servers or peer-to-peer networks.

In any of these cases, access to the file may be controlled by user authentication; the transit of the file over the Internet may be obscured by encryption, and money may change hands before or after access to the file is given. The price can be paid by the remote charging of funds from, for example, a credit card whose details are also passed – hopefully fully encrypted – across the Internet. The origin and authenticity of the file received may be checked by digital signatures or by MD5 or other message digests.

These simple features of the Internet, over a worldwide basis, are changing the basis for the production, sale, and distribution of anything that can be reduced to a computer file for transmission. This includes all manner of print publications, software products, news, music, film, video, photography, graphics and the other arts. This in turn has caused seismic shifts in each of the existing industries that previously controlled the production and distribution of these products.

Internet collaboration technology enables business and project teams to share documents, calendars and other information. Such collaboration occurs in a wide variety of areas including scientific research, software development, conference planning, political activism and creative writing.

### **3.5.6 Streaming Media**

Many existing radio and television broadcasters provide Internet "feeds" of their live audio and video streams (for example, the BBC). They may also allow time-shift viewing or listening such as Preview, Classic Clips and Listen Again features. These providers have been joined by a range of pure Internet "broadcasters" who never had on-air licenses. This means that an Internet-connected device, such as a computer or something more specific, can be used to access on-line media in much the same way as was previously possible only with a television or radio receiver. The range of material is much wider, from pornography to highly specialized, technical webcasts. Podcasting is a variation on this theme, where—usually audio—material is first downloaded in full and then may be played back on a computer or shifted to a digital audio

player to be listened to on the move. These techniques using simple equipment allow anybody, with little censorship or licensing control, to broadcast audio-visual material on a worldwide basis.

Webcams can be seen as an even lower-budget extension of this phenomenon. While some webcams can give full-frame-rate video, the picture is usually either small or updates slowly. Internet users can watch animals around an African waterhole, ships in the Panama Canal, the traffic at a local roundabout or their own premises, live and in real time. Video chat rooms, video conferencing, and remote controllable webcams are also popular. Many uses can be found for personal webcams in and around the home, with and without two-way sound.

YouTube, sometimes described as an Internet phenomenon because of the vast amount of users and how rapidly the site's popularity has grown, was founded on February 15, 2005. It is now the leading website for free streaming video. It uses a flash-based web player which streams video files in the format FLV. Users are able to watch videos without signing up; however, if users do sign up they are able to upload an unlimited amount of videos and they are given their own personal profile. It is currently estimated that there are 64,000,000 videos on YouTube, and it is also currently estimated that 825,000 new videos are uploaded every day.

### **3.5.7 Voice Telephony (VoIP)**

VoIP stands for Voice over IP, where IP refers to the Internet Protocol that underlies all Internet communication. This phenomenon began as an optional two-way voice extension to some of the instant messaging systems that took off around the year 2000. In recent years many VoIP systems have become as easy to use and as convenient as a normal telephone. The benefit is that, as the Internet carries the actual voice traffic, VoIP can be free or cost much less than a normal telephone call, especially over long distances and especially for those with always-on Internet connections such as cable or ADSL.

Thus, VoIP is maturing into a viable alternative to traditional telephones. Interoperability between different providers has improved and the ability to call or receive a call from a traditional telephone is available. Simple, inexpensive VoIP modems are now available that eliminate the need for a PC.

Voice quality can still vary from call to call but is often equal to and can even exceed that of traditional calls.

Remaining problems for VoIP include emergency telephone number dialing and reliability. Currently, a few VoIP providers provide an emergency service, but it is not universally available. Traditional phones are line-powered and operate during a power failure; VoIP does not do so without a backup power source for the electronics.

Most VoIP providers offer unlimited national calling, but the direction in VoIP is clearly toward global coverage with unlimited minutes for a low monthly fee.

VoIP has also become increasingly popular within the gaming world, as a form of communication between players. Popular gaming VoIP clients include Ventrilo and Teamspeak, and there are others available also. The PlayStation 3 and Xbox 360 also offer VoIP chat features.

### **3.6 Internet Access**

Common methods of home access include dial-up, landline broadband (over coaxial cable, fiber optic or copper wires), Wi-Fi, satellite and [3G](#) technology cell phones.

Public places to use the Internet include libraries and Internet cafes, where computers with Internet connections are available. There are also Internet access points in many public places such as airport halls and coffee shops, in some cases just for brief use while standing. Various terms are used, such as "public Internet kiosk", "public access terminal", and "Web payphone". Many hotels now also have public terminals, though these are usually fee-based. These terminals are widely accessed for various usage like ticket booking, bank deposit, online payment etc. Wi-Fi provides wireless access to computer networks, and therefore can do so to the Internet itself. Hotspots providing such access include Wi-Fi cafes, where would-be users need to bring their own wireless-enabled devices such as a laptop or PDA. These services may be free to all, free to customers only, or fee-based. A hotspot need not be limited to a confined location. A whole campus or park, or even an entire city can be enabled. Grassroots efforts have led to wireless community networks. Commercial Wi-Fi services covering large city areas are in place in London, Vienna, Toronto, San Francisco, Philadelphia, Chicago and Pittsburgh. The Internet can then be accessed from such places as a park bench.

Apart from Wi-Fi, there have been experiments with proprietary mobile wireless networks like Ricochet, various high-speed data services over cellular phone networks, and fixed wireless services.

High-end mobile phones such as smartphones generally come with Internet access through the phone network. Web browsers such as Opera are available on these advanced handsets, which can also run a wide variety of other Internet software. More mobile phones have Internet access than PCs, though this is not as widely used. An Internet access provider and protocol matrix differentiates the methods used to get online.

### **3.7 Social Impact**

The Internet has made possible entirely new forms of social interaction, activities and organizing, thanks to its basic features such as widespread usability and access.

Social networking websites such as Facebook and MySpace have created a new form of socialization and interaction. Users of these sites are able to add a wide variety of items to their personal pages, to indicate common interests, and to connect with others. It is also possible to find a large circle of existing acquaintances, especially if a site allows users to utilize their real names, and to allow communication among large existing groups of people.

Sites like meetup.com exist to allow wider announcement of groups which may exist mainly for face-to-face meetings, but which may have a variety of minor interactions over their group's site at meetup.org, or other similar sites.

### **3.8 Leisure Activities**

The Internet has been a major source of leisure since before the World Wide Web, with entertaining social experiments such as MUDs and MOOs being conducted on university servers, and humor-related Usenet groups receiving much of the main traffic. Today, many Internet forums have sections devoted to games and funny videos; short cartoons in the form of Flash movies are also popular. Over 6 million people use blogs or message boards as a means of communication and for the sharing of ideas.

The pornography and gambling industries have both taken full advantage of the World Wide Web, and often provide a significant source of advertising revenue for other websites. Although many governments have attempted to put restrictions on both industries' use of the Internet, this has generally failed to stop their widespread popularity. One main area of leisure on the Internet is multiplayer gaming. This form of leisure creates communities, bringing people of all ages and origins to enjoy the fast-paced world of multiplayer games. These range

from MMORPG to first-person shooters, from role-playing games to online gambling. This has revolutionized the way many people interact and spend their free time on the Internet.

While online gaming has been around since the 1970s, modern modes of online gaming began with services such as GameSpy and MPlayer, to which players of games would typically subscribe. Non-subscribers were limited to certain types of gameplay or certain games.

Many use the Internet to access and download music, movies and other works for their enjoyment and relaxation. As discussed above, there are paid and unpaid sources for all of these, using centralized servers and distributed peer-to-peer technologies. Discretion is needed as some of these sources take more care over the original artists' rights and over copyright laws than others.

Many use the World Wide Web to access news, weather and sports reports, to plan and book holidays and to find out more about their random ideas and casual interests.

People use chat, messaging and e-mail to make and stay in touch with friends worldwide, sometimes in the same way as some previously had pen pals. Social networking websites like MySpace, Facebook and many others like them also put and keep people in contact for their enjoyment.

The Internet has seen a growing number of Web desktops, where users can access their files, folders, and settings via the Internet.

Cyberslacking has become a serious drain on corporate resources; the average UK employee spends 57 minutes a day surfing the Web at work, according to a study by Peninsula Business Services.

### **3.9 Marketing**

The Internet has also become a large market for companies; some of the biggest companies today have grown by taking advantage of the efficient nature of low-cost advertising and commerce through the Internet, also known as e-commerce. It is the fastest way to spread information to a vast number of people simultaneously. The Internet has also subsequently revolutionized shopping—for example; a person can order a CD online and receive it in the mail within a couple of days, or download it directly in some cases. The Internet has also greatly facilitated personalized marketing which allows a company to market a product to a specific person or a specific group of people more so than any other advertising medium.

Examples of personalized marketing include online communities such as MySpace, Friendster, Orkut, Facebook and others which thousands of Internet users join to advertise themselves and make friends online. Many of these users are young teens and adolescents ranging from 13 to 25 years old. In turn, when they advertise themselves they advertise interests and hobbies, which online marketing companies can use as information as to what those users will purchase online, and advertise their own companies' products to those users.

#### **4.0 CONCLUSION**

The Internet has indeed brought about the reality of a global village. It has brought about so much innovations and competitions in business, that is healthy. Despite obvious challenges in terms of security and technology, the Internet will continue to be the dominant factor in the world of business for some time to come. The internet has impacted all spheres of human endeavour, be it business, governance, socials, education and much more. And as the days go by, there will be improvements in the technology to deal with the challenges.

#### **5.0 SUMMARY**

iii. A specific internetwork, consisting of a worldwide interconnection of governmental, academic, public, and private networks based upon the Advanced Research Project Agency Network (ARPANET) developed by ARPA of the U.S. Department of Defense – also home to the World Wide Web (WWW) and referred to as the 'Internet' with a capital 'I' to distinguish it from other generic internetworks.

iv. The Internet Corporation for Assigned Names and Numbers (ICANN) is the authority that coordinates the assignment of unique identifiers on the Internet, including domain names, Internet Protocol (IP) addresses, and protocol port and parameter numbers.

v. 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.

vi. The prevalent language for communication on the Internet is English. This may be a result of the Internet's origins, as well as English's role as a lingua franca.

vii. The Internet can now be accessed virtually anywhere by numerous means. Mobile phones, datacards, handheld game consoles and cellular

routers allow users to connect to the Internet from anywhere there is a cellular network supporting that device's technology.

viii. The e-mail is a concept of sending electronic text messages between parties in a way analogous to mailing letters or memos predates the creation of the Internet.

ix. Common methods of home access include dial-up, landline broadband (over coaxial cable, fiber optic or copper wires), Wi-Fi, satellite and [3G](#) technology cell phones.

x. The Internet has made possible entirely new forms of social interaction, activities and organizing, thanks to its basic features such as widespread usability and access.

xi. The Internet has been a major source of leisure since before the World Wide Web, with entertaining social experiments such as MUDs and MOOs being conducted on university servers, and humor-related Usenet groups receiving much of the main traffic.

xii. The Internet has also become a large market for companies; some of the biggest companies today have grown by taking advantage of the efficient nature of low-cost advertising and commerce through the Internet, also known as e-commerce

## **6.0 TUTOR-MARKED ASSIGNMENT**

1. Mention five uses of the Internet.
2. Briefly discuss how the Internet is relevant to e-commerce.

## **7.0 REFERENCES/FURTHER READINGS**

Media Freedom Internet Cookbook by the OSCE Representative on

Freedom of the Media Vienna, 2004.

Living Internet—Internet History and Related Information, including Information from many creators of the Internet.

First Monday Peer-reviewed Journal on the Internet.

How Much Does the Internet Weigh? by Stephen Cass, Discover 2007.

Rehmeyer, Julie J. 2007. Mapping a Medusa: The Internet Spreads its Tentacles. *Science News* 171(June 23):387-388.

Castells, M. 1996. *Rise of the Network Society*. 3 vols. Vol. 1. Cambridge, MA: Blackwell Publishers.

Castells, M. (2001), "Lessons from the History of Internet", in "The Internet Galaxy", Ch. 1, pp 9-35. Oxford Univ. Press.



## UNIT 5 INTRANET AND E-COMMERCE

### CONTENTS

- 1.0 Introduction
- 2.0 Objectives
- 3.0 Main Content
  - 3.1 What is Intranet
  - 3.2 *Advantages of Intranets*
  - 3.3 *Planning and Creating an Intranet*
  - 3.4 *Promote Intranet Successes*
    - 3.4.1 Track Successes
    - 3.4.2 Measure Customer Satisfaction
    - 3.4.3 Before and After
    - 3.4.4 Communicating Successes
    - 3.4.5 Tangible and Visible
  - 3.5 Why Staffs Visit the Intranet
    - 3.5.1 Finding a Specific Piece of Information
    - 3.5.2 Completing a Specific Task
  - 3.6 Common Intranet Challenges
- 4.0 Conclusion
- 5.0 Summary
- 6.0 Tutor-Marked Assignment
- 7.0 References/Further Readings

### 1.0 INTRODUCTION

An intranet aids in the management of internal corporate information that may be interconnected with a company's e-commerce transactions (or transactions conducted outside the intranet). Inasmuch as the intranet allows for the instantaneous flow of internal information, vital information is simultaneously processed and matched with data flowing from external e-commerce transactions, allowing for the efficient and effective integration of the corporation's organizational processes. In this context, corporate functions, decisions and processes involving e-commerce activities are more coherent and organized.

The proliferation of intranets has caused a shift from a hierarchical command-and control organization to an information-based organization. This shift has implications for managerial responsibilities, communication and information flows, and workgroup structures.

## 2.0 OBJECTIVES

At the end of this unit the student is expected to:

- *know what is an intranet*
- identify the benefits of intranet in e-commerce
- know how to develop and create an intranet
- know why people especially staff of organizations visit the intranet
- understand the challenges facing the intranet as a tool for e-business.

## 3.0 MAIN CONTENT

### 3.1 What is Intranet?

An **intranet** is a private computer network that uses Internet protocols and network connectivity to securely share part of an organization's information or operations with its employees. Sometimes the term refers only to the most visible service, the internal website. The same concepts and technologies of the Internet such as clients and servers running on the Internet protocol suite are used to build an intranet. HTTP and other Internet protocols are commonly used as well, such as FTP. There is often an attempt to use Internet technologies to provide new interfaces with corporate "legacy" data and information systems.

Briefly, an **intranet** can be understood as "**a private version of the Internet,**" or as a version of the Internet confined to an organization. The term first appeared in print on April 19, 1995, in *Digital News & Review* in an article authored by technical editor Stephen Lawton.

Intranets differ from "Extranets" in that the former are generally restricted to employees of the organization while extranets can generally be accessed by customers, suppliers, or other approved parties.

There does not necessarily have to be any access from the organization's internal network to the Internet itself. When such access is provided it is usually through a gateway with a firewall, along with user authentication, encryption of messages, and often makes use of virtual private networks (VPNs). Through such devices and systems off-site employees can access company information, computing resources and internal communications.

Increasingly, intranets are being used to deliver tools and applications, e.g., collaboration (to facilitate working in groups and teleconferencing)

or sophisticated corporate directories, sales and CRM tools, project management etc., to advance productivity.

Intranets are also being used as culture change platforms. For example, large numbers of employees discussing key issues in an online forum could lead to new ideas.

Intranet traffic, like public-facing web site traffic, is better understood by using web metrics software to track overall activity, as well as through surveys of users.

Intranet "User Experience", "Editorial", and "Technology" teams work together to produce in-house sites. Most commonly, intranets are owned by the communications, HR or CIO areas of large organizations, or some combination of the three.

Because of the scope and variety of content and the number of system interfaces, the intranets of many organizations are much more complex than their respective public websites. And intranets are growing rapidly. According to the Intranet design annual 2007 from Nielsen Norman Group the number of pages on participants' intranets averaged 200,000 over the years 2001 to 2003 and has grown to an average of 6 million pages over 2005–2007.

### **3.2 *Advantages of Intranets***

- 1. Workforce productivity:** Intranets can help users to locate and view information faster and use applications relevant to their roles and responsibilities. With the help of a web browser interface, users can access data held in any database the organization wants to make available, anytime and - subject to security provisions - from anywhere within the company workstations, increasing employees' ability to perform their jobs faster, more accurately, and with confidence that they have the right information. It also helps to improve the services provided to the users.
- 2. Time:** With intranets, organizations can make more information available to employees on a "pull" basis (ie: employees can link to relevant information at a time which suits them) rather than being deluged indiscriminately by emails.
- 3. Communication:** Intranets can serve as powerful tools for communication within an organization, vertically and horizontally. From a communications standpoint, intranets are useful to communicate strategic initiatives that have a global reach throughout the organization. The type of information that can easily be conveyed

is the purpose of the initiative and what the initiative is aiming to achieve, who is driving the initiative, results achieved to date, and who to speak to for more information. By providing this information on the intranet, staff have the opportunity to keep up-to-date with the strategic focus of the organization.

4. Web publishing allows '*cumbersome*' corporate knowledge to be maintained and easily accessed throughout the company using hypermedia and Web technologies. Examples include: employee manuals, benefits documents, company policies, business standards, newsfeeds, and even training, can be accessed using common Internet standards (Acrobat files, Flash files, CGI applications). Because each business unit can update the online copy of a document, the most recent version is always available to employees using the intranet.
5. **Business operations and management:** Intranets are also being used as a platform for developing and deploying applications to support business operations and decisions across the internetworked enterprise.
6. **Cost-effective:** Users can view information and data via web-browser rather than maintaining physical documents such as procedure manuals, internal phone list and requisition forms.
7. **Promote common corporate culture:** Every user is viewing the same information within the Intranet.
8. **Enhance Collaboration:** With information easily accessible by all authorised users, teamwork is enabled.
9. **Cross-platform Capability:** Standards-compliant web browsers are available for Windows, Mac, and UNIX.

### ***3.3 Planning and Creating an Intranet***

Most organizations devote considerable resources into the planning and implementation of their intranet as it is of strategic importance to the organization's success. Some of the planning would include topics such as:

- What they hope to achieve from the intranet
- Which person or department would "own" (take control of) the technology and the implementation
- How and when existing systems would be phased out/replaced
- How they intend to make the intranet secure

- How they will ensure to keep it within legislative and other constraints
- Level of interactivity (eg wikis, on-line forms) desired.
- Is the input of new data and updating of existing data to be centrally controlled or devolved.

These are in addition to the hardware and software decisions (like Content Management Systems), participation issues (like good taste, harassment, confidentiality), and features to be supported.

The actual implementation would include steps such as

3. User involvement to identify users' information needs.
4. Setting up a web server with the correct hardware and software.
5. Setting up web server access using a TCP/IP network.
6. Installing the user programs on all required computers.
7. Creating a homepage for the content to be hosted.
8. User involvement in testing and promoting use of intranet.

### **3.4 Promote Intranet Successes**

As discussed in the earlier article, every intranet has its successes, there are few intranet teams who are not steadily delivering valuable improvements to their sites.

Despite this, many intranet teams are almost invisible within their organisations, with little recognition for the new enhancements and functionality they have delivered.

This must change, if intranet teams are to obtain the resources and support they need. Part of the solution is for intranet teams to be more proactive and effective in communicating their successes.

Here, we outline a number of practical ways of promoting success stories, drawn from the real-life approaches taken by intranet teams across a variety of organisations.

#### **3.4.1 Track Successes**

The first step is for intranet teams to be more disciplined in tracking intranet changes and new functionality. At the simplest level, this could just be a document listing the improvements in each month.

Even this simple document can be very effective at communicating to management (and the broader group of stakeholders) what the intranet team 'has actually been doing'.

This type of tracking also demonstrates the volume of work that is done by the intranet team, which is important when justifying existing team resources, or requesting additional staff.

### **3.4.2 Measure Customer Satisfaction**

Intranet teams are often asked for metrics on their effectiveness. One way of gathering these is to measure internal 'customer' satisfaction relating to intranet work.

Customer satisfaction figures can be gathered in a very direct and simple way, by sending the internal customer a feedback form at the completion of each intranet job.

This asks for a score on the quality and timeliness of the work, as well as assessing overall satisfaction. Free text fields can be used to capture additional comments.

This information can then be used by the intranet team to report back to management on the team's effectiveness. Internal communications teams have used this approach for many years, with considerable success.

### **3.4.3 Before and After**

Even when major changes have been made to the site, it can be hard to remember what the old site looked like. Over time, changes are quickly forgotten or taken for granted.

One approach used by intranet teams is to have a portfolio of changes. Consisting of a book containing 'before and after' screenshots, this concretely shows the impact of even small changes. It is also a very physical object that stakeholders or managers can flip through.

### **3.4.4 Communicating Successes**

Intranet teams must also communicate their success stories more widely throughout their organisations. News stories should be written that outline key changes, along with quotes or examples from actual business users or stakeholders.

The internal company newsletter can be a good way of disseminating these stories. The news box on the intranet homepage can also be very effective.

These 'good news' stories should be written in business language, focusing on business benefits. There is little interest in behind-the-

scenes changes such as a new CMS or revised metadata, or other such 'technical' improvements.

### **3.4.5 Tangible and Visible**

To be most effective, intranet teams should carefully pick activities that matter to the wider organisation, and communicating them more meaningfully and powerfully.

## **3.5 Why Staff Visit the Intranet**

Organisations often envisage their intranets as integral to the way staff do their jobs. Staff are expected to visit the intranet daily.

While this is an admirable goal, it doesn't necessarily match the reality of most intranets today. There are clear reasons for staff to use the intranet, but these are not always well understood.

In practice, there are two key reasons for a staff member to come to the intranet: to find a specific piece of information, or to complete a specific task.

Recognizing this, intranet designers can ensure that intranet resources are targeted in ways that will have the greatest impact.

We here explore these two key reasons for intranet usage, and discusses their impact on intranet strategies and approaches.

There are two fundamental reasons why staff visit the corporate intranet:

### **3.5.1 Finding a Specific Piece of Information**

The staff member is looking for a specific fact, detail or figure (such as how much leave they have left to take this year).

### **3.5.2 Completing a Specific Task**

The staff member has a particular activity to do, which the intranet can help with (such as booking travel).

Note that in both cases, the staff member is not looking for the HR manual, a procedure, or some other general resource. Instead, they are seeking something very specific to meet an immediate need.

## **Secondary Reasons**

There are other reasons why staff use an intranet. They may want to keep up with what is happening in the organisation (news), or learn about how the organisation works (new starters).

While these are legitimate needs that must be met, they fall far behind the two main goals outlined above.

Intranet usage will be increased if it's the default browser home page, but usage may not extend into the rest of the site.

- **In and out**

The most immediate consequence of the reasons staff visit the intranet is that their usage is very 'in and out'. When they have a need they open the intranet, navigate or search until they have what they want, and then close the intranet.

Staff don't live in the intranet, and their day-to-day work lies in the real world. The intranet is therefore only used when needed, and ignored the rest of the time.

- **Focused usage**

When using the intranet in this manner, staff are very focused on finding the specific item, or completing the current task. Any other information will be seen as a distraction and ignored (this is known as 'inattention blindness'), until the primary activity is completed.

This is challenging for intranet teams, as it means that while a frequently used feature will be very helpful to staff, it may not increase usage of the rest of the site. (For example, the staff directory is often a 'killer app', but the rest of the site may still be rarely used.)

### **Using other sources**

In many cases, staff will try other sources of information first, before coming to the intranet. This includes using the piece of paper pinned to their cubicle wall, asking the person sitting next to them or picking up the phone.

The intranet is therefore a resource of 'last resort' in most cases. It may only be used when something is hard to find or uncommon.

### **Making the intranet useful**

The corollary of all of these observations is this: if you want the intranet to be used more, make it more useful. The better the intranet helps staff



find specific pieces of information or complete specific tasks, the more extensively it will be used. (As long as staff know that the intranet provides these capabilities.)

Only then will the intranet become a more effective news channel, as well as delivering other benefits (such as building corporate culture).

### 3.6 Common Intranet Challenges

Most intranets suffer from one or more common problems, regardless of whether their organisations are large or small. While every organisation has at least a few unique challenges, the same problems are seen in many organisations.

- **The intranet is just a collection of unconnected sub-sites**, with little overall management or structure.
- **Information is unstructured, out of date and duplicated**, with content problems affecting most of the site.
- **Publishing processes are fragmentary and ineffective**, with a mix of inexperienced authors and limited publishing policies.
- **There is little executive sponsorship**, and the intranet is not recognised as a key business tool.
- **Resources are very limited**, with the intranet teams operating on a very small budgets.
- **Insufficient technology underpins the intranet**, with no site-wide content management system or effective search.
- **The role of the intranet is unclear**, with competing technologies, platforms and business interests.
- **No overall information management strategy exists**, which would determine future directions and platform choices.
- **There are too few intranet team members**, making it hard to tackle new projects.

These problems are significant barriers that reduce an intranet team's ability to deliver an effective and successful site. At the end of the day, they all boil down to: *there is much to be done, but few easy options and too few resources.*

## 4.0 CONCLUSION

The intranet and extranet are majors tool driving e-business. Intranets are principally the electronic transactions between employees and their employers so that business transactions can be effective and efficient. The success of the intranet depends largely on the cordial relationships

between both employers and employee. Integrity and trust is expected of the employee.

## 5.0 SUMMARY

This unit is summarized as follows:

i. An **intranet** is a private computer network that uses Internet protocols and network connectivity to securely share part of an organization's information or operations with its employees.

ii. Workforce productivity: Intranets can help users to locate and view information faster and use applications relevant to their roles and responsibilities.

iii. Most organizations devote considerable resources into the planning and implementation of their intranet as it is of strategic importance to the organization's success.

iv. As discussed in the earlier article Every intranet has its successes, there are few intranet teams who are not steadily delivering valuable improvements to their sites.

v. Organizations often envisage their intranets as integral to the way staff do their jobs. Staff are expected to visit the intranet daily.

vi. Most intranets suffer from one or more common problems, regardless of whether their organizations are large or small. While every organization has at least a few unique challenges, the same problems are seen in many organizations.

## 6.0 TUTOR-MARKED ASSIGNMENT

1. List the steps to the implementation of an Intranet in an organization.
2. Briefly discuss common challenges associated with intranet

## 7.0 REFERENCES/FURTHER READINGS

Stephen Lawton's *Digital News & Review* Article "*Intranets Fuel Growth of Internet Access Tools.*"

Callaghan, J. (2002), *"Inside Intranets & Extranets: Knowledge Management AND the Struggle for Power"*, Palgrave Macmillan, ISBN 0-333-98743-8.

Pernice Coyne, Kara; Schwartz, Mathew; Nielsen, Jakob (2007). *"Intranet Design Annual 2007"*, Nielsen Norman Group.

University of South Carolina Making the most of Inhouse Communications Intranet: Table of Contents | Macmillan Computer Sciences: Internet and Beyond.

## **MODULE 2**

Unit 1      Mobile Commerce

Unit 2	E-Commerce Strategies
Unit 3	Economics of E-Commerce: Case of Software Distribution over Internet
Unit 4	E-Commerce Security

## **UNIT 1      MOBILE COMMERCE**

### **CONTENTS**

1.0	Introduction
2.0	Objectives
3.0	Main Content
3.1	History
3.2	What is Driving M-Commerce?
3.3	Characteristics of Wireless vs. Wired
3.4	M-Commerce versus E-Commerce
3.5	Products and Services Available
3.5.1	Mobile Ticketing
3.5.2	Mobile Vouchers, Coupons and Loyalty Cards
3.5.3	Content Purchase and Delivery
3.5.4	Location-based Services
3.5.5	Information Services
3.5.6	Mobile Banking
3.5.7	Mobile Brokerage
3.5.8	Auctions
3.5.9	Mobile Purchase
3.5.10	Mobile Marketing and Advertising
3.6	Factors to Consider: Mobile Customer and Applications
3.7	Payment Systems and Issues
3.8	Limiting Factors
3.8.1	Lack of Standards
3.8.2	Device Constraints
3.8.3	Networks
3.8.3.1	Move from 2G to 2.5G to 3G Networks
4.0	Conclusion
5.0	Summary
6.0	Tutor-Marked Assignment
7.0	References/Further Readings

### **1.0      INTRODUCTION**

**Mobile Commerce** is also known as **M-Commerce**, **mCommerce** or **U-Commerce**.

## Multiple Definitions

There is no precise definition for mobile commerce or mobile e-commerce. Every analyst, vendor and trade magazine appears to have a slightly different interpretation of the term. In fact, there appears to be a consensus now on the meaning of its big brother “e-commerce or e-business” which came first. Perhaps, in another six months or a year, we would come to a similar consensus on m-commerce. Meanwhile, here are a few sample definitions:

“M-Commerce is the use of mobile devices to communicate, inform transact and entertain using text and data via a connection to public and private networks.” (Lehman Brothers)

“The core of mobile e-commerce is the use of a terminal (telephone, PDA, PC device, or custom terminal) and public mobile network (necessary but not sufficient) to access information and conduct transactions that result in the transfer of value in exchange for information, services or goods.” (Ovum)

“Business-to-consumer transactions conducted from a mobile device.” (J.P. Morgan)

“E-Commerce over mobile devices.” (Robinson-Humphreys)

“Mobile Commerce refers to any transaction with monetary value that is conducted via a mobile telecommunications network.” (Durlacher)

“The use of mobile handheld devices to communicate, interact via an always-on high-speed connection to the Internet.” (Forrester)

“The use of wireless technologies to provide convenient personalized and location-based services to your customers, employees and partners.” (Mobilocity)

The ability to conduct commerce, using a mobile device e.g. a mobile phone (or cell phone), a PDA, a smartphone while on the move, and other emerging mobile equipment, like dashtop mobile devices. In an academic definition (Tiwari and Buse, 2007).

Typical examples of m-commerce are:

- Purchasing airline tickets
- Purchasing movie tickets

- Restaurant booking and reservation
- Hotel booking and reservation.

## **2.0 OBJECTIVES**

At the end of this unit the student is expected to:

- define mobile commerce from different perspectives
- trace the history and development of m-commerce
- know some common examples of m-commerce
- identify the driving forces behind m-commerce
- mention the characteristics associated with wireless applications
- differentiate m-commerce from e-commerce
- know some of the products and services available in m-commerce.

## **3.0 MAIN CONTENT**

### **3.1 History**

In 2000 and 2001 hundreds of billions of dollars in licensing fees were paid by European telecommunications companies for UMTS and other 3G licenses. The high prices paid were due to the expectation of highly profitable mobile commerce applications. These mobile commerce applications would be delivered through broadband mobile telephony provided by 2.5G and 3G cellphone services.

PDAs and cellular phones have become so popular that many businesses are beginning to use m-commerce as a more efficient method of reaching and communicating with their customers. Although technological trends and advances are concentrated in Asia and in Europe, Canada and the United States are also beginning to experiment with early-stage m-commerce.

With the forthcoming spectrum auction by the FCC, scheduled for early 2008, there will be major auction rule changes that will create more consumer options while reducing control by telecom operators as "network gatekeepers".

The less price sensitive early adopters from the 13-25 age groups could drive the initial growth. Growth in mobile products such as ringtones, games, and graphics may displace spending on many traditional youth products such as music, clothing, and movies. This would radically change the dynamics of all visual entertainment and product-service distribution world wide so marketers could target end-users with diverse youth mind sets. The youth market has historically shown rapid viral growth which later gains acceptance in the mass market. While

emerging markets are proving to be the ideal solution for sustaining revenues in the face of falling ARPU average price per unit, analysts say the rapid commercialization of 3G services is likely to open up new opportunities in developed markets.

In order to exploit the m-commerce market potential, handset manufacturers such as Nokia, Ericsson, Motorola, and Qualcomm are working with carriers such as AT&T Wireless and Sprint to develop WAP-enabled smart phones and ways to reach them. Using Bluetooth technology, smart phones offer fax, e-mail, and phone capabilities.

"Profitability for device vendors and carriers hinges on high-end mobile devices and the accompanying killer applications," said Burchett. Perennial early adopters, such as the youth market, which are the least price sensitive, as well as more open to premium mobile content and applications, must also be a key target for device vendors.

### 3.2 What is Driving M-Commerce

- Exponential growth of consumer interest and adoption of the Internet and e-commerce.
- Tremendous growth in mobile telephony; however, voice has become a commodity and will no longer fuel revenue growth for operators.
- Development of real-time transfer of data over 2.5G and 3G networks will enable faster data transmission and 'always-on' connectivity.
- The evolution of the handheld devices incorporating WAP and now GPRS.
- Mobile e-commerce market is worth \$3.5 billion in 2000 and will grow to over \$200 billion by 2005 (Ovum).
- Cost of entry into mobile e-commerce is low for most entrants; for example, a bank can implement a sophisticated m-banking solution in under six months for around \$1 million.
- The unique features of the mobile device such as its compactness for convenience and personalized functions; subsequently, people have become quite attached to their devices.
- Attracting players from all economic sectors from technology, finance, retail, media, all anticipating.

### 3.3 Characteristics of Wireless vs. Wired

**Ubiquity:** The use of wireless device enables the user to receive information and conduct transactions anywhere, at anytime.

**Accessibility:** Mobile device enables the user to be contacted at

virtually anytime and place. The user also has the choice to limit their accessibility to particular persons or times.

**Convenience:** The portability of the wireless device and its functions from storing data to access to information or persons.

**Localization:** The emergence of location-specific based applications will enable the user to receive relevant information on which to act.

**Instant Connectivity (2.5G):** Instant connectivity or "always on" is becoming more prevalent with the emergence of 2.5 G networks, GPRS or EDGE. Users of 2.5 G services will benefit from easier and faster access to the Internet.

**Personalization:** The combination of localization and personalization will create a new channel/business opportunity for reaching and attracting customers. Personalization will take the form of customized information, meeting the users' preferences, followed by payment mechanisms that allow for personal information to be stored, eliminating the need to enter credit card information for each transaction.

Time Sensitivity – Access to real-time information such as a stock quote that can be acted upon immediately or a sale at a local boutique.

### 3.4 M-Commerce versus E-Commerce

Frequently m-commerce is represented as a "subset of all e-commerce" thus implying that any e-commerce site could and should be made available from a wireless device. We believe that such conclusions are misleading. M-commerce should be recognized as a unique business opportunity with its own unique characteristics and functions, not just an extension of an organization's Internet-based e-commerce channel. Of course there are similarities between e-commerce and m-commerce from being able to purchase a product or service in a "virtual" vs. a build and mortar environment.

Technology	E-Commerce	M-Commerce
Device	PC	Smartphones, pagers, PDAs,
Operating System	Windows, Unix, Linux	Symbian (EPOC), PalmOS, Pocket PC, proprietary platforms.
Presentation Standards	HTML	HTML, WML, HDML, i-Mode



Browser	Microsoft Explorer, Netscape	Phone.com UP Browser, Nokia browser, MS Mobile Explorer and other microbrowsers
Bearer Networks	TCP/IP & Fixed Wireline Internet	GSM, GSM/GPRS, TDMA, CDMA, CDPD, paging networks

### 3.5 Products and Services Available

#### 3.5.1 Mobile Ticketing

Tickets can be sent to mobile phones using a variety of technologies including bCODE and NFC. Users are then able to use their tickets immediately by presenting their phones at the venue. Recently, WiMAX-enabled dashtop mobile payment platforms made a debut, ID on kiosk keypads at the entrance of ballparks, airports, train stations instead of physical tickets, but this dashtop mobile equipment will take some years to get commercially implemented.

The travel industry is working on technologies that will update customers on flight status, notify them when this information changes and will offer to make new arrangements based on preset user preferences requiring no input from the user. Therefore, a customer's entire trip can be scheduled and maintained using a mobile device. Tickets can be booked and cancelled on the mobile with the help of simple application downloads or by accessing WAP portals of various Travel agents or direct service providers.

Mobile ticketing for airports, ballparks, and train stations, for example, will not only streamline unexpected metropolitan traffic surges, but also help users remotely secure parking spots (even while in their vehicles) and greatly facilitate mass surveillance at transport hubs.

#### 3.5.2 Mobile Vouchers, Coupons and Loyalty Cards

Mobile ticketing technology can also be used for the distribution of vouchers, coupons and loyalty cards. The voucher, coupon, or loyalty card is represented by a virtual token that is sent to the mobile phone. Presenting a mobile phone with one of these tokens at the point of sale allows the customer to receive the same benefits as another customer who has a loyalty card or other paper coupon/voucher. Mobile delivery enables:

- economy of scale
- quicker and easier delivery
- effective target marketing
- privacy-friendly data mining on consumer behaviour
- environment-friendly and resources-saving efficacy

### **3.5.3 Content Purchase and Delivery**

Currently, mobile content purchase and delivery mainly consists of the sale of ring-tones, wallpapers, and games for mobile phones. The convergence of mobile phones, mp3 players and video players into a single device will result in an increase in the purchase and delivery of full-length music tracks and video. Download speeds, if increased to 4G levels, will make it possible to buy a movie on a mobile device in a couple of seconds, while on the go.

### **3.5.4 Location-based Services**

Unlike a home PC, the location of the mobile phone user is an important piece of information used during mobile commerce transactions. Knowing the location of the user allows for location based services such as:

- local maps
- local offers
- local weather
- people tracking and monitoring.

### **3.5.5 Information Services**

A wide variety of information services can be delivered to mobile phone users in much the same way as it is delivered to PCs. These services include:

- news services
- stock data
- sports results
- financial records
- traffic data and information.

Particularly, more customized traffic information, based on users' travel patterns, will be multicast on a differentiated basis, instead of broadcasting the same news and data to all Users. This type of multicasting will be suited for more bandwidth-intensive mobile equipment.

### **3.5.6 Mobile Banking**

Banks and other financial institutions are exploring the use of mobile commerce to allow their customers to not only access account information, but also make transactions, e.g. purchasing stocks,

remitting money, via mobile phones and other mobile equipment. This service is often referred to as Mobile Banking or M-Banking. More negative issues like ID theft, phishing and pharming are lurking when it comes to mobile banking, particularly done on the mobile web. Net security technology free from redundancy and paradigm shifts away from mobile web-based banking will be an optimal solution to mobile banking in the near future.

### **3.5.7 Mobile Brokerage**

Stock market services offered via mobile devices have also become more popular and are known as Mobile Brokerage. They allow the subscriber to react to market developments in a timely fashion and irrespective of their physical location.

### **3.5.8 Auctions**

Over the past three years mobile reverse auction solutions have grown in popularity. Unlike traditional auctions, the reverse auction (or low-bid auction) bills the consumer's phone each time they place a bid. Many mobile PSMS commerce solutions rely on a one-time purchase or one-time subscription; however, reverse auctions are high return applications as they allow the consumer to transact over a long period of time.

### **3.5.9 Mobile Purchase**

Mobile purchase allows customers to shop online at any time in any location. Customers can browse and order products while using a cheap, secure payment method. Instead of using paper catalogues, retailers can send customers a list of products that the customer would be interested in, directly to their mobile device or consumers can visit a mobile version of a retailers ecommerce site. Additionally, retailers will also be able to track customers at all times and notify them of discounts at local stores that the customer would be interested in.

### **3.5.10 Mobile Marketing and Advertising**

Mobile marketing is an emerging concept, but the speed with which it's growing its roots is remarkable. Mobile marketing is highly responsive sort of marketing campaign, especially from brands' experience point of view. And almost all brands are getting higher campaign response rates. Corporations are now using m-commerce to expand everything from services to marketing and advertisement. Although there are currently very few regulations on the use and abuses of mobile commerce, this will change in the next few years. With the increased use of m-

commerce comes increased security. Cell phone companies are now spending more money to protect their customers and their information from online intrusions and hackers.

### **3.6 Factors to Consider: Mobile Customer and Applications**

#### **Mobile Customer**

"Customers will use wireless devices to access the Internet only if they have a good reason to do so".

Fundamental attributes common to the mobile customer

- Expectations: Web vs. Wireless experience Education (M-commerce study disappointed in their m-commerce experience)
- Education
- Don't Set/Sell Unrealistic Expectations: Limit Hyped-Up possibilities, such as, Wireless Web – misleading – one can not push a Web service onto the cell phone
- Newness of the Wireless Internet attracting media and marketing hype, promoting unrealistic expectations among consumers.
- Offering customers something new that could not do without a e wireless device
- General characteristics: empowered consumer, educated, computer savvy, and seeking customer service.
- Voice is still the Killer app
- Most customers use wireless phones for voice phone calls
- Wireless data features are much less popular than wireless voice
- Personalization: Began with the personalized services/customized information and services via the Internet.
- Act on only relevant information vs. Information overload
- Wireless devices as a personal companion
- Expect companies to offer information relevant to their needs and interests and presented in a simplified manner
- Seeking an easy and simplified m-commerce experience
- Advertising relevant (authorized)
- Personalized billing/payment functionality
- Dependency on location and Time
- Understand the customer's activity schedule, for instance, services accessed during working hours will differ from those on during the evening or on weekends
- Device used will determine mode of access
- Consumer Behavior
- Patience will be demanded of players, as consumer behavior requires

both time and effort to change.

- Evolution of the industry from networks to handsets will require players to educate their customers.

### **3.7 Payment Systems and Issues**

#### **Scenarios**

- Wireless payment by handheld devices like Palm - beam Palm to a credit card terminal using infra red now and Bluetooth in future. The Point Of sale credit card terminal has an infra red device attached to it.
- Cashless payment without using conventional credit cards
- Mobile wallet initiatives

#### **The Requirement**

To provide a comprehensive infrastructure (consumer software and hardware enhancement, if required for handheld device, software in retailer's server for processing a wireless transaction, backend payment and account reconciliation application infrastructure at a centralized processing center - akin to credit card processing by Visa or Master Card, the security mechanism, etc) so that an end-to-end transaction can take place between a consumer and card or wallet holding organization.

#### **Micro-payment Examples**

This term defines payment for small value transactions by using new m-commerce systems. Paying by credit cards is not economical because of high processing costs for such transactions.

- Mount Sinai hospital allows employees to charge their purchases by using their ID cards that have a micro chip embedded into these cards.
- Boeing, DaimlerChrysler and Walt Disney allow their employees to do the same.

#### **Factors and Issues in Web-based Mobile Payment Application**

- Lack of standards for m-commerce between different financial institutions
- End-to-end security issue
- Retailer-processing center integration problems - too many variables in OSes.
- High transaction processing capacity at the backend application

processors - see Visa's initiative to use Sun Solaris that is claimed to handle 10,000 transactions per second

- Lack of payment infrastructure.

### **Smart Card and M-Commerce Payment Systems**

In Europe, smart card is being integrated into payment systems. Go here about a press release on Oberthur's pilot with smart card as a vehicle for m-commerce payment.

### **Major Vendors Initiatives**

- Palm and Visa Partnership** - Palm Inc. has started an initiative with **Visa** to allow consumers to use Palm devices to beam credit card information to POS terminals through an Infra Red (IR) connection. While this is an early stage trial and pilot, it is significant to see two major players involved in getting users to modify their individual payment methods.

- Visa International** has rolled out a high-transaction payment infrastructure (consisting of Cisco networking gear and Sun Solaris J2EE processors) for online transactions. This is expected to be enhanced to allow mobile commerce. For more info, see Information week story. Visa and Master are feeling the heat from micropayment vendors.

- City Group** made a deal with AOL- this will allow AOL subscribers to transfer funds and make payments for web purchases.

- Cybercash** is an online payment processor - charges 15 cents/transaction, plus set up fee of \$99 for existing and \$499 for new customers (mid 2000 pricing).

- SNAZ Mobile Wallet** is related but not exactly a payment system. It facilitates payment for buying online multiple items from different merchants. "Please note that SNAZ declared bankruptcy in August 2001. Hopefully, some other vendor will pick up the intellectual property developed by SNAZ." - MobileInfo Editor.

- Person to person payment systems.** This allows any two people exchange money anywhere and at anytime. Since this is a paradigm shift to replace hard cash with electronic cash without the Federal Banking system of each country or a credit card institution like Visa or master card, it may find consumer resistance.

- For three months, Macdonald Hamburger chain has been testing a new wireless payment technology in nine restaurants in Chicago and four in California. Working with Exxon Mobil, McDonald's is enabling its

customers to use their Mobil Speedpass transponders to swipe pass special cash registers to pay for their meals.

- **VeriSign** has agreed to supply new trust engines to be embedded in wireless communication devices of DoCoMo's i-mode 3G services.
- **FreedomPay.Com** (a micro-payment vendor) is working with Nokia to allow consumers to buy stuff from vending machines by using their cellular phones. Nokia is planning to embed RF devices in smart phones to allow this capability FreedomPay.Com is going after the lunch crowd.
- **wMode** - wireless micro-payment vendor.

### **3.8 Limiting Factors**

#### **3.8.1 Lack of Standards**

- With a host of device operating systems and platforms, middleware solutions and networks, make application development for the wireless Internet a formidable task, versus the level operating environment of the wired Web.
- Even though efforts are underway to standardize the operating environment, especially in North America, where standardization is most lacking, companies will have to work within this scattered environment, at least in the short-term.

#### **3.8.2 Device Constraints**

- Weak processors
- Limited memory
- Tiny screens, poor resolutions
- Poor data entry.

WAP: While WAP has been a very important in the evolution of the wireless Internet and in turn m-commerce, there are problems/difficulties with the standard, such as the lack of WAP-enabled devices and security issues.

#### **3.8.3 Networks**

Current data speeds between 9.6-14.4 kbps are too slow, expensive vs fixed.

##### **3.8.3.1 Move from 2G to 2.5G to 3G Networks**

###### **i. 2.5G Networks**

- 2.5G will mean the incorporation of packet-data capabilities onto existing network circuit-switched networks, such as GPRS on GSM
- Better suited for Internet applications
- Provide higher data speeds (25-35 kbps)
- Enable 'always on' connectivity
- Most operators will be upgrading but service is not expected to 2000
- Cost per users/session is expected to be lower

## ii. 3G Networks

- Support high-speed applications up to 144 kbps while in motion and 2 mbps while stationary
- Provides increase in network capacity through new spectrum
- Allows subscribers to access their services while roaming

## 4.0 CONCLUSION

Mobile commerce is actually a form of e-commerce which has brought about mobility to e-commerce. The additional benefit m-commerce has brought to the concept of e-commerce is that you can do your business while on the move. Time lag in business transactions are further cut down. It is worthy to note that more improvements are needed in the area of the network capacity to drive the technology itself and even in its applications.

## 5.0 SUMMARY

i. M-Commerce is the use of mobile devices to communicate, inform transact and entertain using text and data via a connection to public and private networks.” (Lehman Brothers).

ii. In 2000 and 2001 hundreds of billions of dollars in licensing fees were paid by European telecommunications companies for UMTS and other 3G licenses. The high prices paid were due to the expectation of highly profitable mobile commerce applications. These mobile commerce applications would be delivered through broadband mobile telephony provided by 2.5G and 3G cellphone services.

iii. Frequently m-commerce is represented as a "subset of all e-commerce" thus implying that any e-commerce site could and should be made available from a wireless device.



iv. The travel industry is working on technologies that will update customers on flight status, notify them when this information changes and will offer to make new arrangements based on preset user preferences requiring no input from the user.

v. Banks and other financial institutions are exploring the use of mobile commerce to allow their customers to not only access account information, but also make transactions.

vi. Customers will use wireless devices to access the Internet only if they have a good reason to do so.

## **6.0 TUTOR-MARKED ASSIGNMENT**

1. Give four typical examples of m-commerce.
2. Discuss the characteristics of Wireless and Wired forms of communications connection.

## **7.0 REFERENCES/FURTHER READINGS**

Increasing Trends of Mobile Marketing.

Tiwari, R. and Buse, S. (2007): *The Mobile Commerce Prospects: A Strategic Analysis of Opportunities in the Banking Sector*, Hamburg: Hamburg University Press.

Increasing Trends of Mobile Marketing.

Tiwari, R., Buse, S., and Herstatt, C. (2006): From Electronic to Mobile Commerce: Opportunities through Technology Convergence for Business Services, in: *Asia Pacific Tech Monitor*, Vol. 23, No. 5 (Issue: Sept-Oct. 2006), pp. 38-45, New Delhi.

## **UNIT 2      E-COMMERCE STRATEGIES**

### **CONTENTS**

- 1.0 Introduction
- 2.0 Objectives
- 3.0 Main Content
  - 3.1 Strategic Goals
  - 3.2 Components of Strategies
  - 3.3 Interactivity
  - 3.4 Strategic Success
  - 3.5 Internet Marketing Plan
  - 3.6 Steps to Creating Internet Marketing Plans
  - 3.7 Questions a Strategic Plan should Answer
  - 3.8 Steps to Successful E-Commerce Programmes
    - 3.8.1 Success 1
    - 3.8.2 Success 2

- 3.8.2.1 Provide more than the Basics
- 3.8.2.2 Show a Human Face
- 3.8.2.3 Think Globally
- 3.8.2.4 Experiment
- 3.8.2.5 Develop a Highly Quality Virtual Catalog
- 3.8.2.6 Advertise on Search Engines
- 3.8.2.7 Negotiate Links with other Websites

- 4.0 Conclusion
- 5.0 Summary
- 6.0 Tutor-Marked Assignment
- 7.0 References/Further Readings

## **1.0 INTRODUCTION**

Technology is a strategic tool for growth, and e-commerce is no exception. While e-commerce has generally produced only marginal revenue gains for existing businesses, it is still extremely valuable as a virtual display window, shopping source, collaborative site, service depot, transaction centre and customer gateway to your business - and therefore it is an essential part of growth.

E-commerce requires the mastery of many interrelated skills – both technical and business – and this complex requirement often constitutes the first obstacle facing the e-merchant.

Success with e-commerce largely depends upon obtaining expert technical assistance, and not straying from strategic goals that caused you to introduce it in the first place.

## **2.0 OBJECTIVES**

At the end of this unit the student is expected to:

- identify the strategic goals of e-commerce strategy
- answer the question of the components of an e-commerce strategy
- know some recommendations from IBM on how to develop a successful strategy
- know what is marketing plan and steps to developing it
- understand the multidimensional nature of developing an e-commerce strategy.

## **3.0 MAIN CONTENT**

### **3.1 Strategic Goals**

Examples of strategic goals that e-commerce can help you accomplish:

- Improve efficiency in your systems
- Promote innovation
- Create information systems to improve your bottom line
- Extend your marketing reach and range
- Integrate your Web presence with your business plan.

### **3.2 Components of Strategies**

Once you have identified your strategic goals, the next step is to evaluate the kinds of e-commerce activities that can help you accomplish "mission critical" objectives. Typical components of business-to-business and business-to-customer e-commerce strategies include:

- Goods or services trading
- Online catalogs
- Sales promotion and advertising
- Online digital content delivery
- Transaction processing
- Electronic bills of lading processing
- Collaborative work interaction
- Manufacturing management
- Accounts settlement
- Online sourcing
- Public procurement
- Inventory management
- Customer support
- Post-sales service.

Do not limit your thinking in this regard, but most small businesses focus on:

- Product promotion via online catalogs
- Transaction processing
- Customer support.

### **3.3 Interactivity**

Here are increasingly popular types of interactive Web site content:

- i.Polls and surveys: Discover more about site visitors - but make it an option to respond, not a requirement for entry. You get more co-operation if you offer something for free.
- ii.Self-testing: Personality profiles, aptitude tests and situational quizzes

- with scoring - get people involved with your site.

iii. Visitor content: Invite visitors to post questions and answers, or leave commentary.

iv. Community-building: Message boards, chat rooms, topic-specific features create virtual communities of visitors with similar interests.

v. Newsletters: Start an online newsletter to display your expertise, but get permission from customers and visitors before sending.

vi. Online training: Teach customers how to use or install your product with RealAudio ([www.realaudio.com](http://www.realaudio.com)), streaming video or flashcard-type pages.

### 3.4 Strategic Success

IBM consultants offer the following advice for e-commerce success:

**iii. Seek technical expertise.** E-commerce will soon be central to your business if it isn't already. Don't treat it as an afterthought.

**iv. Link to your strategic plan.** Make e-commerce priorities the same as other business priorities so that it's an investment, not a side bet.

**v. Move swiftly.** In many industries, business cycles already reflect e-commerce efficiencies and speed. Don't wait - you will concede the advantage to competitors.

**vi. Fully integrate e-commerce systems with core systems from the start.** Build in compatibility with all systems, networks and applications. This ensures consistent information in all parts of your business. You can then manage all systems as one enterprise.

**vii. Ensure systems are dependable.** Scalability, availability and security are not optional. Systems that are available 95% of the time lose 5% of sales opportunities.

**viii. Satisfy the customer.** Study the online customer. Get to know who they are and what they want. Online, competitors are just a click away.

**ix. Allow for future expansion.** Overbuild your systems - early overcapacity is less expensive than starting again if your site crashes and customers move on.

### 3.5 Internet Marketing Plan

In order to understand Internet marketing plan, marketers need to understand what is Internet marketing, i.e. the Five W's of Internet marketing:

1. What is Internet marketing
2. Who can benefit from Internet marketing
3. Why should I invest in Internet marketing
4. When is the best time to adopt Internet marketing and go online
5. Where do I go to make all these things happen?

An Internet marketing plan is a map for successful marketing on the Internet. Before an effective Internet marketing plan is developed, managers need to answer the following questions. What are those marketing goals/who are the selected target market? What competition has already been identified? What marketing materials has the organization already produced?

### 3.6 Steps to Creating Internet Marketing Plans

Creating marketing plans requires at least seven steps:

1. Conduct situation analysis
2. Identify target stakeholders
3. Set objectives. Some objectives are global, while others are apply to specific targets
4. Designing marketing-mix strategies to meet the objectives
5. Designing an action plan i.e. tactics to implement the strategies
6. Develop a budget
7. Develop an evaluation plan.

A company needs strategic planning for E-commerce since there are different options to available. A company may decide as follows:

- Not to go for E-commerce
- To do only passive advertising
- To open online store in addition to existing stores, typically called e-tailing
- To establish a separate online division within the company
- To dissolve regular business and go for cyber business.

There are two major types of e-commerce strategies i.e. Competitive strategy and Cooperative strategy.

**Cooperative Strategies:** These are used to gain competitive advantage within an industry by working with other firms. Strategic alliance is a partnership of multiple corporations formed to achieve a competitive advantage that are mutually beneficial.

Companies may form strategic alliances for reasons including to:

- obtain technology and/or manufacturing capabilities;
- obtain access to specific markets;
- reduce financial risks;

- reduce political risks;
- achieve or ensure competitive advantage;
- utilize unused capacity; and
- combine areas of excellence.

### **3.7 Questions a Strategic Plan should Answer**

- How is E-commerce going to change our business
- How do we uncover new types of business opportunities
- How do we take advantage of new electronic linkages with customers and trading partners
- Do we become intermediaries ourselves
- How do we bring more buyers together electronically and keep them there
- How do we change the nature of our products and services
- How do we manage and measure the evolution of our strategies.

### **3.8 Steps to Successful E-Commerce Programmes**

#### **3.8.1 Success 1**

1. Conduct necessary education and training
2. Review current distribution and supply chain models
3. Understand what your customers and partners expect from the web
4. Reevaluate the nature of your products and services
5. Give a new role to your human resources department
6. Extend your current system to the outside
7. Track new competitor and market shares
8. Develop a web centric marketing strategy
9. Participate in the creation and development of virtual market place
10. Instill E-Commerce management style.

#### **3.8.2 Success 2**

By harnessing the power of the worldwide web, small businesses are now able to reach beyond local markets to sell their products to customers around the world.

But just like your local market, the world of e-commerce is highly competitive. To be successful you're going to need to stay one step

ahead of the competition. Here are some strategies that will help you gain – and maintain – a competitive advantage over your very real competitors in the virtual world of e-commerce.

### **3.8.2.1 Provide More than the Basics**

It is all too simple for customers to use the web to scope out both you and your competitors' price and selection. That means unless you want to operate in a commodity market place, it's imperative to deliver that extra something that makes you indispensable. Maybe it is information. Maybe it is a way you streamline customers' routine tasks. Or maybe it is a function, like project management, which helps make customers more effective in their jobs.

### **3.8.2.2 Show a Human Face**

It is possible to reduce customer service costs by reducing cycle times or product returns. But do not expect an e-ticket to reducing support staff – at least not any time soon. Instead many companies venturing into e-commerce find themselves adding support people to staff telephones, answer e-mails, and train customers in the use of electronic medium.

### **3.8.2.3 Think Globally**

The moment a company ventures online, it competes against companies in the whole world. Learn how competitors around the globe handle customer support issues. Check out their sites to see how they deal with problems. Just remember that e-commerce opens a window into your own operations too.

### **3.8.2.4 Experiment**

Despite all the e-commerce campaign being waged, no one really has a formula for what works and what doesn't. That is because e-commerce attempts to change customers' buying behaviour. One tack is to start small- it is better to try, fail, and try again. Just try because in a few, quick Internet years, everyone will be scrabbling over what is left.

### **3.8.2.5 Develop a Highly Quality Virtual Catalog**

To truly succeed in e-commerce, you'll need to invest in the development of a first-rate virtual catalog. Similar to a mail catalog, a virtual catalog displays photos and information about your products, and provides a method for customers to place orders. But instead of sending the catalog to the customer, the customer comes to the catalog by



visiting your company's website.

Virtual catalogs have a number of distinct advantages over traditional mailed ones. The nature of a website makes it easier to display your product in a variety of options and to include additional product information that there may not be room for in a mail catalog. Also, unlike a mail catalog, virtual catalogs can be easily changed to add or remove products and to update product availability information.

Having a poorly constructed virtual catalog can sometimes be worse than having no catalog at all. Since creating quality Internet catalogs requires a certain amount of expertise, you should probably outsource this task to a dependable web designer.

### **3.8.2.6 Advertise on Search Engines**

Your website and virtual catalog will only be as effective as the amount of traffic (potential customers) that visits the site. To increase traffic, you'll need to explore the possibility of advertising on search engines, e.g. Google and Yahoo.

Most search engines sell space for ads that will appear alongside or around the list of websites that appear when an Internet surfer types in a set of search words. Under the right conditions, these ads can be a great way to direct people who may already have an interest in your product to your website.

### **3.8.2.7 Negotiate Links with other Websites**

Another way to increase traffic is to negotiate links to your site with other high traffic websites. For either a fee or a reciprocal linking agreement, other companies may be willing to include an ad for your business on their website. While it's highly unlikely that you'll convince the competition to participate in this kind of arrangement, it is very possible to negotiate links with companies that sell complementary or non-competing products.

Another benefit of links: One of the variables most search engines use to rank websites is the number of links that exist to your site from other sites. The more links there are to your website, the more likely it is that your site will appear ahead of the competition in keyword search.

#### **4.0 CONCLUSION**

*Indeed there are several strategies being adopted in e-commerce. Thus, there is no one strategy that could be all encompassing but basic the rule remain that the goals must be well spelt out and the market and the audience well identified. A true test of any strategies will be how effective and efficient the strategy is capturing business as well as positioning the organization to compete better in the global market.*

#### **5.0 SUMMARY**

i.E-commerce requires the mastery of many interrelated skills – both technical and business – and this complex requirement often constitutes the first obstacle facing the e-merchant

ii.Once you have identified your strategic goals, the next step is to evaluate the kinds of e-commerce activities that can help you accomplish "mission critical" objectives.

iii.There are two major types of e-commerce strategies i.e. Competitive strategy and Cooperative strategy.

iv.By harnessing the power of the worldwide web, small businesses are now able to reach beyond local markets to sell their products to customers around the world.

v.To truly succeed in e-commerce, you will need to invest in the development of a first-rate virtual catalog. Similar to a mail catalog, a virtual catalog displays photos and information about your products, and provides a method for customers to place orders. But instead of sending the catalog to the customer, the customer comes to the catalog by visiting your company's website.

#### **6.0 TUTOR-MARKED ASSIGNMENT**

1. Mention five examples of strategic goals that can be accomplished by e-commerce.
2. List five reasons for a company to engage in a strategic e-commerce alliance.

#### **7.0 REFERENCES/FURTHER READINGS**

Gaebler Ventures, (2001-2008). *Successful E-Commerce Strategies*.

Technobrand Review, (2001). *How to Develop an E-Commerce Strategy*.

### **UNIT 3      ECONOMICS OF E-COMMERCE: CASE OF SOFTWARE      DISTRIBUTION      OVER INTERNET**

#### **CONTENTS**

- 1.0 Introduction
- 2.0 Objectives
- 3.0 Main Content
  - 3.1 Distribution of Software as Production of Software
  - 3.2 Driving Internet Traffic as Distribution of Software
  - 3.3 The Internet Distribution Chain
  - 3.4 Internet Distribution Chain Metrics
  - 3.5 Marginal Cost of Distribution
  - 3.6 Variations in Internet Distribution Chains
  - 3.7 Increasing Marginal Cost of Distribution and Profit Seeking Behavior
- 4.0 Conclusion
- 5.0 Summary
- 6.0 Tutor-Marked Assignment

## 7.0 References/Further Readings

### 1.0 INTRODUCTION

The ever growing popularity of personal computing and the Internet in recent years has drawn interest to the economic principles that guide the production and distribution of *Information Goods* in general and software and other *Digital Goods* in particular. Observing the economic forces that govern markets for such products, researchers have concluded that the products themselves possess unique characteristics that distinguish them from traditional products.

Most researchers have based their economic analysis on the assumption that "Information is costly to produce but cheap to reproduce". It was noted that many high-tech products, including software, "typically have R&D costs that are large relative to their unit production costs" (Arthur, 1996) and that digital goods "typically have the property that it is very costly to produce the first copy and very cheap to produce subsequent copies" (Varian, 1995). It has been argued that "with information goods the pricing-by-replication scheme breaks down." And that "this has been a major problem for the software industry: once the sunk costs of software development are invested, replication costs essentially zero" (MacKie-Mason and Varian, 1995).

These underlying assumptions are evident in further research on the information economy. Based on them, Varian examined the role *Differential Pricing* (Varian, 1996) and *Versioning* (Varian, 1997) play in the profit-seeking behavior of *Information Goods* producers, Bakos and Brynjolfsson (1997) and MacKie-Mason, Riveros and Gazzale (1999) have explored the effects bundling has on pricing *Information Goods* and Arthur (1996) has been using them to clarify the concept of *Increasing Returns*. The same assumption has also been widely used in the business journalistic community to explain the competitive landscape of the software industry (for example, Aley, 1996; and, Romano, 1998).

In this unit there is an alternative perspective towards these assumptions. As far as software products are concerned, production and distribution are parts of the same process and that distribution over the Internet consists mainly of driving consumer traffic to an Internet server. Presented is a generalized distribution model for software in which analysis of software production and distribution costs can be done. When distribution costs are considered to be variable production costs, software products distributed over the Internet are in fact relatively costly to produce.

Based on this analysis the economics of software distribution over the Internet is not fundamentally different from those of traditional products where production is constrained by *Increasing Marginal Costs* and where the price is equal to the *Marginal Cost of Production*.

## 2.0 OBJECTIVES

At the end of this unit the student is expected to:

- understand the distribution of software to mean the production of software
- know the use of the Internet in the distribution of software
- know what is Internet distribution chain
- understand the Internet distribution chain metrics
- know how to calculate marginal costs of e-commerce product like software
- know the variations in the Internet distribution chain.

## 3.0 MAIN CONTENT

### 3.1 Distribution of Software as Production of Software

The production process of traditional goods and services requires a significant input of labor, raw materials or both in order to produce a product. As the costs associated with the *Factors of Production* are incurred for each and every unit of output, it is easy to classify them as *Variable Costs*. The production of software on the other hand does not display such a connection between inputs and outputs. Software products require significant input of labor in order to produce the first copy but the inputs in labor or raw materials needed in order to produce additional copies are small or even non-existing. For example if a software product has been uploaded to an Internet server, any copy download by a consumer to her workstation generates an output with what seems to be no input. As there seems to be no input, there also seems to be no input costs associated with this software product.

While this approach toward inputs might be appropriate for analyzing specific scenarios of *Information Goods* production, it ignores the fact that when looking at software distributed over the Internet, the production and the distribution of such software are parts of a single process.

This can be easily illustrated. Assume that a software product has been uploaded to an Internet server but on a given day no copy of the software has been downloaded from that server. In such a case no production and no distribution have been done. Now assume that on

another day a hundred copies of the product have been downloaded. In such a case a hundred units have been produced and distributed. The number of units produced on any given day will solely depend on the number of units downloaded.

In the case of Internet-downloadable software, if it is not distributed then it is not produced. Thus, for software distributed over the Internet, distribution channels serve the very same function production lines serve for traditional products.

This merger of two separate processes - production and distribution - into one is the true unique characteristic of software distributed over the Internet. It results in any costs associated with distribution becoming costs associated with *Factors of Production*. As distribution is such a crucial part of software production, further analysis of the mechanism that is used to distribute software over the Internet and the costs associated with such distribution is needed.

### **3.2 Driving Internet Traffic as Distribution of Software**

When we usually think of distribution we think of it in terms of mobilizing products from the location in which they are produced and stored to the market in which they are consumed (Ganeshan and Harrison, 1995). Distributing software over the Internet however is different. Looking into the way software is distributed, we can see that the market for these goods is formed on an Internet server where the software is downloaded; this is the location where supply is met by demand. The formation of this sort of market depends on consumers having access to a specific Internet server with a capability of downloading a given software product.

To illustrate this further we can look again at the aforementioned example. On the day no consumer accessed the Internet server and downloaded the product, no distribution had been made. On the day a hundred consumers accessed the server and downloaded the product, a hundred units had been distributed.

In the case of Internet-downloadable software, if there are no consumers accessing the server then there is no market, resulting in no distribution of goods to that market. Thus, for software distributed over the Internet, bringing consumers to the Internet server has the very same function as mobilizing traditional products to consumers.

Though sometimes referred to as "distribution"], the act of downloading by itself does not constitute an act of distribution, as it does not represent the act of bringing goods to a market where consumers can

have access to it. Downloading is merely the act of transaction and the method used to complete such transaction.

It can thus be argued that for software distributed over the Internet, the act of distribution does not mean mobilizing products from the location in which they are produced to the market, as is the case with traditional products, and neither does it mean the act of downloading such software. Distribution is bringing consumers to the Internet server from which software products can be downloaded. This is most commonly referred to by those in the Internet industry as the act of driving Internet traffic to an Internet server.

Therefore, the practices used to drive traffic to a specific Internet server are actually production practices and the costs associated with it are actually costs associated with production. This way of looking at software production and distribution over the Internet opens an opportunity to look at the economics of software from a different perspective.

### **3.3 The Internet Distribution Chain**

In order to examine the economics of software distribution over the Internet, a generalized distribution model upon which further analysis will be based must first be constructed. The model presented herein will be referred to as the *Internet Distribution Chain*.

The *Internet Distribution Chain* is a description of a process. The model defines the various phases involved in distributing software over the Internet, the metrics used in each phase and the quantitative relationships that exist within the chain. Because we regard distribution as an act of production, the model is describing the process of distribution within a distribution channel in a way that resembles the way production models describe production within a production facility. As the model includes both inputs in terms of costs incurred for establishing the chain, and outputs in terms of units sold, it is useful in analyzing the cost structure of software production and distribution.

The *Internet Distribution Chain* has four phases through which potential consumer traffic is driven. These phases are:

1. Attention - Gaining consumer attention for the software product;
2. Introduction - Introducing the software product to the consumer;
3. Evaluation - Having the consumer evaluate the software product; and,
4. Acquisition - Having the consumer purchase and use the software product.

Consumer attention is gained by using various promotion methods. The most common technique is online advertising using banners and text links. Various other business relationships between companies are geared toward achieving the same goal. These include among others co-branding, link sharing, search-engine prioritizing and service announcements to users.

Introducing the consumer to the software product is usually done using the vendor's Web site or any other Web site affiliated with the vendor from which consumers can download the software. Software vendors sometime seek to merge the *Attention* and *Introduction* phases of the chain, for example, by providing banner ads that enable direct downloading of software. This however does not change the structure of the chain, only the values associated with each phase.

*Evaluation* is done when the potential consumer is using the software product in such a way that enables her to assess its value. Generally *Information Goods* are considered *Experience Goods*, meaning products that the consumer has to experience in order to determine a specific value. Most vendors distributing software over the Internet tend to regard their software as such a product and thus let consumers use the software for free under certain limitations such as time and functionality. However, even in cases where free evaluation is not possible, the consumer is still facing an evaluation process when she needs to make a purchasing decision. The merging of *Evaluation* with *Acquisition* does not change the structure of the chain, only the values associated with each phase. Consumer traffic driven through all phases will ultimately result in the purchase of a software product and the *Acquisition* of a customer.

The purpose each phase in the chain is intended to serve is only potential. When a banner is displayed, it does not necessarily generate consumer attention but rather the potential for gaining such. Only when the consumer clicks the banner or link can it be concluded that her attention has been grabbed. The same rule applies to the *Introduction* and *Evaluation* phases, only when the consumer has decided to download the product can we conclude that she has been *introduced* to it and only when she makes the purchase can we know for sure that she has *evaluated* the product. Thus, each phase within the chain is linked to the following one by the realization of potential actions. These links are utilization ratios between what was potential and what was realized.

Each phase in the chain has two values associated with it - *Quantity* and *Price*. The linking ratios permit the calculation of these two values for each and every phase in the chain. This makes the *Internet Distribution Chain* a generalized model that can be used in analyzing any observed



distribution scenario, regardless of the way the transaction is constructed and to analyze it from an economic point of view.

Attention		Introduction		Evaluation		Acquisition
Quantity	Utilization Ratio	Quantity	Utilization Ratio	Quantity	Utilization Ratio	Quantity
Price		Price		Price		Price

### 3.4 Internet Distribution Chain Metrics

Common metrics are used throughout the Internet industry to measure different variables associated with different parts of the chain (Brown, 2001). The metric used to measure the amount of potential consumer attention generated is the number of *Impressions*, meaning how many times a link to the Internet server has been displayed to potential consumers at the origin of the distribution chain. The cost associated with generating this potential attention is denoted as *CPM* (Cost Per Mila), that is the cost of displaying a thousand links to potential consumers at the origin of the chain. The distributing vendor can only assess the scope of attention generated when it has been realized, that is, when a link has been followed. The utilization of *Impressions* is denoted as *CTR* (Click Through Ratio), that is the percentage of links followed out of these displayed.

The metric used to measure the amount of potential consumer introduction generated is the number of *Hits*, meaning how many times the linked Internet server has been accessed by potential consumers. The cost associated with generating this potential introduction is denoted as *CPC* (Cost Per Click), that is the cost of having a single potential consumer, originating from the source of the distribution chain, access the Internet server. The distributing vendor can only assess the scope of introduction generated when it has been realized, that is, when a software download has been made by a visiting consumer. Various names are used to refer to the utilization of *Hits*. It will be denoted here as *DLR* (Download Ratio), that is the percentage of downloads made by customers out of those accessing the server.

The metric used to measure the amount of potential consumer evaluation generated is the number of *Downloads*, or the number of consumers arriving via the distribution chain actually using a specific software product. Various descriptions are used to refer to the cost associated with generating a potential evaluation. Here it will be denoted as *CPD* (Cost Per Download), that is the cost of having a single potential consumer, originating from the source of the distribution chain, evaluate the software. The distributing vendor can only assess the scope of evaluation, when a software purchase has been made by the consumer.

There are a variety of ways to describe the utilization of *Downloads*; here it will be denoted as *AQR* (Acquisition Ratio), that is the percentage of purchases made by consumers out of the total evaluating a given software product.

The metric used to measure acquisitions is the number of *Customers*. The cost associated with generating a consumer is denoted as *CPA* (Cost Per Acquisition), that is the cost of having a single potential consumer originating from the source of the distribution chain purchase software.

Attention		Introduction		Evaluation		Acquisition
Impressions	CTR	Hits	DLR	Downloads	AQR	Customers
CPM		CPC		CPD		CPA

### 3.5 Marginal Cost of Distribution

In recent years Internet traffic has become a commodity that can be bought or sold much like any other commodity on the market. Software vendors can buy traffic from Internet Web sites serving as distribution channels in any of the forms described in the chain. *Impressions*, *Hits*, *Downloads* and even guaranteed *Customers* can now be bought. However regardless of the form of the transaction, establishing an *Internet Distribution Chain* has costs associated with it. Unlike the costs associated with the creation of the first copy of the software, these costs are directly associated with each and every copy of software produced. It is thus impossible to regard these costs as *Fixed Costs*.

Having a *Variable Cost* associated with each copy of software enables us to look at software production and distribution from a traditional economic perspective, one in which the marginal cost of production and distribution is significant rather than from a perspective in which it is low, or even zero.

The following example illustrates how applying the *Internet Distribution Chain* model to a specific case reveals a considerable *Marginal Cost of Distribution* that can be allocated to the produced copy of software.

Consider a vendor seeking to distribute software and consider a major Internet portal as the distribution channel. The vendor is establishing an *Internet Distribution Chain* by acquiring banner ads on a specific section of the portal. She is buying 1,000,000 impressions at \$1 *CPM*.

Assuming CTR is 2% the result would be 20,000 hits to the vendor's site.  $CPC = \text{Total Cost}/\text{Hits} = 1,000/20,000 = \$0.05$

Assuming DLR is 5% the result would be 1,000 Downloads.  
 $CPD = \text{Total Cost}/\text{Downloads} = 1,000/1,000 = \$1$

Assuming AQR is 5% the result would be 50 Customers.  
 $CPA = \text{Total Cost}/\text{Customers} = 1,000/50 = \$20$

Attention		Introduction		Evaluation		Acquisition
Impressions 1,000,000	CTR 2%	Hits 20,000	DLR 5%	Downloads 1,000	AQR 5%	Customers 50
CPM \$1		CPC \$0.05		CPD \$1		CPA \$20

Using this *Internet distribution Chain* the software vendor has a *Total Cost* of \$1,000 associated with distribution. The *Marginal Cost* associated with distributing one copy of the software is \$20.

### 3.6 Variations in Internet Distribution Chains

*Internet Distribution Chains*, much like *Factors of Production*, vary in their yield and thus in their efficiency. Internet traffic is not uniform and the characteristics of the audience attracted by Web sites vary. As the audience varies so does its response to the message conveyed by each phase in the *Internet Distribution Chain*. A certain audience might respond well to a specific promotion message while another type of audience might fail to notice it. These variations in characteristics of the audience result in variations in the utilization ratios within the *Internet Distribution Chain*.

An *Internet Distribution Chain* originating in one Web site might not result in yielding the same values as another *Internet Distribution Chain* originating at another Web site. Even within the same distribution channel variations might exist and two *Internet Distribution Chains* originating in two different parts of the same Web site might produce different yields.

The metric used to measure the efficiency of an *Internet Distribution Chain* is the CPA, which represents a ratio between input in terms of cost and output in terms of units produced. The variations in yield causes variations in efficiency and in the CPA generated. For software distribution this means that the *Marginal Cost of Distribution* is different for each *Internet Distribution Chain*.

The following example illustrates how the *Marginal Cost of Distribution* varies between chains when the *Internet Distribution Chain* model is applied to a specific case of distribution via multiple chains.

Consider a vendor seeking to distribute software and consider a major Internet portal as the distribution channel. The vendor is establishing three *Internet Distribution Chains* by acquiring banner ads on three sections of the portal each with its own distinctive characteristics and audience. She is buying 1,000,000 impressions on each section at \$1 CPM. For simplicity we will assume that the only change in the distribution chain would be a change in CTR resulting from variations in the audience addressed:

$$CTR_1 = 2\%, CTR_2 = 1.2\%, CTR_3 = 1\%$$

Assuming all other utilization ratios are the same, the *Internet Distribution Chains* would be:

Attention		Introduction		Evaluation		Acquisition
Impressions 1,000,000	CTR 2%	Hits 20,000	DLR 5%	Downloads 1,000	AQR 5%	Customers 50
CPM \$1		CPC \$0.05		CPD \$1		CPA \$20

Attention		Introduction		Evaluation		Acquisition
Impressions 1,000,000	CTR 1.2%	Hits 12,000	DLR 5%	Downloads 600	AQR 5%	Customers 30
CPM \$1		CPC \$0.12		CPD \$1.67		CPA \$33.33

Attention		Introduction		Evaluation		Acquisition
Impressions 1,000,000	CTR 1%	Hits 10,000	DLR 5%	Downloads 500	AQR 5%	Customers 25
CPM \$1		CPC \$0.10		CPD \$2		CPA \$40

Using these *Internet Distribution Chains* the software vendor has a *Total Cost* of \$3,000 associated with distribution. The *Average Variable Cost* associated with distributing one copy of software is \$28.60.

$$\text{Average Variable Cost} = \text{Total Cost} / (\text{Customers}_1 + \text{Customers}_2 + \text{Customers}_3) = 3000 / (50 + 30 + 25) = 28.6$$

For the first chain the *Marginal Cost of Distribution* is \$20.

For the second chain the *Marginal Cost of Distribution* is \$33.33.

For the third chain the *Marginal Cost of Distribution* is \$40.

### **3.7 Increasing Marginal Cost of Distribution and Profit-Seeking Behaviour**

*Internet Distribution* involves the use of scarce resources. There is a finite number of *Impressions* that can be generated by a Web site acting as a distribution channel within a specific time period and thus there are a finite number of *Internet Distribution Chains* that can be established at any given moment. Further more, within this time frame there are a finite number of *Impressions* that can be used as inputs for each *Internet Distribution Chain*.

From the point of view of the vendor, *Internet Distribution Chains* are variable Factors of production. Using or not using chains is a short-term decision by the vendor. A vendor seeking to distribute software over the Internet will seek to distribute through *Internet Distribution Chains* that produce a higher yield resulting in lower CPAs. This behavior resembles the behavior of traditional manufacturers using these *Variable Factors of Production* that cost less prior to using those that cost more.

However, much like a traditional manufacturer seeking to expand production, the finite number of chains that can be established and the finite yield of these chains would result in utilization of additional *Internet Distribution Chains* with lower yield and higher CPA. The software vendor thus faces an *Increasing Marginal Cost of Distribution*. Under such conditions the behavior of a profit-seeking vendor again resembles that of a traditional manufacturer. Such a vendor will continue to establish new chains and will seek to enlarge the number of *Impressions* acquired on such chains as long as the chains are profitable. A chain will be profitable if, and only if, CPA for that chain is smaller than or equal to the price of the software product. With such behavior the vendor's profit will be maximized when the *Marginal Cost of Distribution* is equal to the price of the software.

## **4.0 CONCLUSION**

In this unit is proposed the *Internet Distribution Chain* as a model for analyzing the cost structure of software production and distribution over the Internet. Using this model it is shown that software vendors face significant *Marginal Costs of Distribution* and that profit-seeking

behavior by such vendors will bring the *Marginal Cost of Distribution* to equal the price of the software product.

Looking at the economics of software distribution over the Internet from this perspective opens the opportunity to look at pricing, competitive scenarios and equilibrium (or lack of such) using classic microeconomic models. It also calls for further research into the economic principles that guide the production and distribution of other *Information Goods* as well as into the economic principles that guide marketing and distribution of traditional goods over the Internet.

Revisiting the basic assumptions of information economics on a case-by-case base should result in better understanding of how these economics work and what specific characteristics distinguish it from traditional economics.

## 5.0 SUMMARY

i. The ever growing popularity of personal computing and the Internet in recent years has drawn interest to the economic principles that guide the production and distribution of Information Goods in general and software and other Digital Goods in particular.

ii. The production process of traditional goods and services requires a significant input of labor, raw materials or both in order to produce a product. As the costs associated with the Factors of Production are incurred for each and every unit of output, it is easy to classify them as Variable Costs.

iii. When we usually think of distribution we think of it in terms of mobilizing products from the location in which they are produced and stored to the market in which they are consumed.

iv. In order to examine the economics of software distribution over the Internet, a generalized distribution model upon which further analysis will be based must first be constructed.

v. Common metrics are used throughout the Internet industry to measure different variables associated with different parts of the chain (Brown, 2001).

vi. In recent years Internet traffic has become a commodity that can be bought or sold much like any other commodity on the market. Software vendors can buy traffic from Internet.

vii. Internet Distribution Chains, much like Factors of Production, vary in their yield and thus in their efficiency. Internet traffic is not uniform and the characteristics of the audience attracted by Web sites vary.

viii. From the point of view of the vendor, Internet Distribution Chains are variable Factors of production. Using or not using chains is a short-term decision by the vendor.

## 6.0 TUTOR-MARKED ASSIGNMENT

1. List the phases of an Internet software distribution chain.
2. What is the meaning of the following acronyms associated with the economics of e-commerce: CPM, CTR, CPC, DLR, and CPD?

## 7.0 REFERENCES/FURTHER READINGS

J. Aley, (1996). *"Give it away and get Rich,"* Fortune, volume 133, number 11, p. 90.

W.B. Arthur, (1996). *"Increasing Returns and the New World of Business,"* Harvard Business Review, (July-August).

Y. Bakos and E. Brynjolfsson, (1997). *"Bundling Information Goods: Pricing, Profits and Efficiency,"* Working Paper, MIT Center for Coordination Science.

Brown, (2001). *"E-Commerce and Marketing Dictionary of Terms."*

R. Ganeshan and T.P. Harrison, (1995). *"An Introduction to Supply Chain Management."*

J.K. MacKie-Mason and H.R. Varian, (1995). *"Economic FAQs About the Internet,"* Journal of Electronic Publishing, Volume 2, Number 1 (May).

J.K. MacKie-Mason, J.F. Riveros and R.S. Gazzale, (1999). *"Pricing and Bundling Electronic Information Goods: Evidence from the Field,"* In: I. Vogelsang and B.M. Compaine (editors). *The Internet Upheaval: Raising Questions, Seeking Answers in Communications Policy.* Cambridge, Mass.: MIT Press, pp. 277- 305.

M. Romano, (1998). *"Is there such a thing as a Software Monopoly?"* Salon (November).

Shapiro and H.R. Varian, (1999). *Information Rules: A Strategic Guide to the Network Economy*. Boston: Harvard Business School Press.

H.R. Varian, (1997). *"Versioning Information Goods,"* research paper prepared for *Digital Information and Intellectual Property*, Harvard University (23-25 January).

H.R. Varian, (1996). *"Differential Pricing and Efficiency," First Monday*, Volume 1, Number 2 (August).

H.R. Varian, (1995). *"Pricing Information Goods,"* presented at the Research Libraries Group Symposium on *"Scholarship in the New Information Environment,"* Harvard Law School, Cambridge, Mass.

## **UNIT 4      E-COMMERCE SECURITY**

### **CONTENTS**

- 1.0    Introduction
- 2.0    Objectives
- 3.0    Main Content
  - 3.1    Computers and Security
  - 3.2    Security Methods
    - 3.2.1    Encryption
    - 3.2.2    Digital Signatures and Certificates
    - 3.2.3    Secure Socket Layers
    - 3.2.4    PCI, SET, Firewalls and Kerberos



- 3.3 Setting up Security
- 3.4 Security and Websites
  - 3.4.1 Account Security
  - 3.4.2 Server Security
  - 3.4.3 Third Party Security
  - 3.4.4 Software Security
  - 3.4.5 Copyright
  - 3.4.6 Updating Software
- 3.5 Is Security Necessary?
- 3.6 Customer Security: Basic Principles
- 3.7 Practical Consequences
- 3.8 Tracking the Customer
- 3.9 Security Concerns
  - 3.9.1 Areas that Need Security
  - 3.9.2 Areas that do not Need Security
- 4.0 Conclusion
- 5.0 Summary
- 6.0 Tutor-Marked Assignment
- 7.0 References/Further Readings

## **1.0 INTRODUCTION**

There is a lot of discussion these days about e-commerce security as more people use email and more services such as banking, mail orders and subscriptions become available through the Internet. But how secure is the Internet and e-commerce and what is computer security?

Also, business is done with many communication technologies today, walk-in retail, mail-order phone, mail-order fax etc. The Web and the Internet are just one another communication medium with its own benefits and disadvantages. The cost for a business to have a world wide presence is the lowest in history with the World Wide Web. Budgets of the 1980's would have listed at least \$100,000 per month in expenses to have a business handling international customers 24 hours a day, seven days a week. Today those same budgets are closer to \$5,000 per month and some even much lower. Yet the quality of service that the customer of these businesses is expecting continues to climb.

With these demands you need a scalable sales force, immediate, accurate and secure information exchange, automatic delivery of products, and accurate tracking information for package delivery. In this article we will discuss the issues in constructing a web site that can give you all of this and much more. However, there are some pitfalls to be watchful of. The anonymity of the people buying from you can make you feel like you are talking to Mr. X. You rarely have the chance to speak directly with your customers. It is also far more difficult to get a feel for the size and condition of your vendors and your competitors. You have to help your customers overcome the fear that many people have putting their credit card number into a form on a web page. Using and understanding eCommerce can give you a strong advantage over your competitors while providing greater value and comfort to your customers.

## 2.0 OBJECTIVES

At the end of this unit the student is expected to:

- know the various types of security measures for e-commerce
- have a basic understanding of how to set up security measures
- specifically know some security measures for a web site
- answer the question of how relevant is security measures
- know the basic principles for customer security
- know how to track a customer as a security measure.

## 3.0 MAIN CONTENT

### 3.1 Computers and Security

Before the Internet, computer security was limited to '**closed systems**' or **network** computers such as offices or banks where only people physically in the office could use the computer system. It was quite easy for the **network supervisor** to set up **user names** and **passwords** and since that time people have become used to **logging on** before they can use these types of computers or resources.

With the advent of the Internet, computers users can now work in an '**open system**' and security has become much more complicated. Even though you can now connect your home or office computer to the Internet and perform **remote transactions** without leaving the building you still want to be sure that the transaction is secure. The transaction takes place through the **Internet** by bouncing the information through various computers before it reaches, for example, the bank's computer.

You want to be sure that no one observes the transaction along the way and collects or modifies your transaction information.

This is where computer security comes in. There are many different types of security systems though most use a process called **encryption**. When you connect to your bank or other service to make a transaction you are often required to send your account number or user name as well as a Personal Identification Number (PIN) or password for verification. This information should only be sent after establishing a **secure connection**. If you are using an Internet browser you will see a small closed lock appear in the window of the browser. Once you are connected to a **secure server** any information you send or receive is scrambled or **encrypted** using a mathematical formula and then reassembled or **decrypted** at the other end. The computer user usually will not notice this happening as they perform their **secure transaction**. Anyone with criminal intent who intercepts your transaction will be treated to a stream of garbled nonsense - (e.g. qANQR1DBwU4D560EJv6XqrMQB)!

If this is the first time you use a new service you most often will need to **setup an account** and possibly **download** a small piece of software called a **plug in** which allows your computer to create the secure connection or link.

The transaction often involves the exchange of a small file that keeps track of the transaction and can act a flag or bookmark when you next visit that website. These small files are called **cookies** and are set by the website you are visiting. They can contain information such as the type of server you are connecting from, the type of browser you are using, the last site you visited and any information you volunteer. You can view the information stored in the cookie. Try a search for 'cookie' to find the cookies folder. Windows users can view any cookies they are storing in the folder C:\Windows\Cookies\.

## 3.2 Security Methods

### 3.2.1 Encryption

Privacy is handled by encryption. In PKI (public key infrastructure) a message is encrypted by a public key, and decrypted by a private key. The public key is widely distributed, but only the recipient has the private key. For authentication (proving the identity of the sender, since only the sender has the particular key) the encrypted message is encrypted again, but this time with a private key. Such procedures form the basis of RSA (used by banks and governments) and PGP (Pretty Good Privacy, used to encrypt emails).

Unfortunately, PKI is not an efficient way of sending large amounts of information, and is often used only as a first step – to allow two parties to agree upon a key for symmetric secret key encryption. Here sender and recipient use keys that are generated for the particular message by a third body: a key distribution center. The keys are not identical, but each is shared with the key distribution center, which allows the message to be read. Then the symmetric keys are encrypted in the RSA manner, and rules set under various protocols. Naturally, the private keys have to be kept secret, and most security lapses indeed arise here.

Encryption also involves using the key pair but in reverse. Once your message is completed you encrypt the file using the recipient's public key ensuring that only the recipient can ever access that message with their private key.

### **3.2.2 Digital Signatures and Certificates**

Digital signatures meet the need for authentication and integrity. To vastly simplify matters (as throughout this page), a plain text message is run through a hash function and so given a value: the message digest. This digest, the hash function and the plain text encrypted with the recipient's public key is sent to the recipient. The recipient decodes the message with their private key, and runs the message through the supplied hash function to that the message digest value remains unchanged (message has not been tampered with). Very often, the message is also timestamped by a third party agency, which provides non-repudiation.

What about authentication? How does a customer know that the website receiving sensitive information is not set up by some other party posing as the e-merchant? They check the digital certificate. This is a digital document issued by the CA (certification authority: Verisign, Thawte, etc.) that uniquely identifies the merchant. Digital certificates are sold for emails, e-merchants and web-servers.

### **3.2.3 Secure Socket Layers**

SSL stands for Secure Sockets Layer. This is the technique in which web servers and web browsers encrypt and decrypt all of the information that they transmit and receive. Secret decoder ring time. Both ends establish and use the same scheme for making sure that no one else is listening to their conversation.

Information sent over the Internet commonly uses the set of rules called TCP/IP (Transmission Control Protocol/Internet Protocol). The

information is broken into packets, numbered sequentially, and an error control attached. Individual packets are sent by different routes. TCP/IP reassembles them in order and resubmits any packet showing errors. SSL uses PKI and digital certificates to ensure privacy and authentication. The procedure is something like this: the client sends a message to the server, which replies with a digital certificate. Using PKI, server and client negotiate to create session keys, which are symmetrical secret keys specially created for that particular transmission. Once the session keys are agreed, communication continues with these session keys and the digital certificates.

### 3.2.4 PCI, SET, Firewalls and Kerberos

Credit card details can be safely sent with SSL, but once stored on the server they are vulnerable to outsiders hacking into the server and accompanying network. A PCI (peripheral component interconnect: hardware) card is often added for protection, therefore, or another approach altogether is adopted: SET (Secure Electronic Transaction). Developed by Visa and Mastercard, SET uses PKI for privacy, and digital certificates to authenticate the three parties: merchant, customer and bank. More importantly, sensitive information is not seen by the merchant, and is not kept on the merchant's server.

Firewalls (software or hardware) protect a server, a network and an individual PC from attack by viruses and hackers. Equally important is protection from malice or carelessness within the system, and many companies use the Kerberos protocol, which uses symmetric secret key cryptography to restrict access to authorized employees.

## 3.3 Setting up Security

As the most people won't be setting up their own secure server the scope of this section is limited to the topics of protecting **email** and small business or organizational transactions.

Email can be protected using a **service** or an **application** (program). There are others but the two that stand out currently are **S/MIME** and **PGP**. S/MIME requires the user to register with a 3 party service which issues a digital id that you attach to your message. Though this is usually a commercial service there is often a free introductory period. PGP is free for personal use or a commercial application for business use and is run from your own computer.

Both methods allow users to **sign** or attach a **digital identification** to the email message which verifies, to the recipient, that the message is from the original person or organization and that the information wasn't

tampered with in transit. These methods also allow the user to encrypt their message so that anyone intercepting the message wouldn't be able to read it. You can also decide the level of encryption from low; in which a nerd with some good software and enough time on their hands could possibly decrypt to high (128 bit) which would take a whole mountain of experts weeks to decrypt if even then. Most of us will choose somewhere in between as this process involves increased time and file size.

Both methods use **key pairs** of **public** and **private** keys. Your public keys are sent to everyone that you communicate through email with. Your public key can be sent through various methods including posting it to an internet service or sending it as part of an email message. Public keys can also be post on your website in a file. Your friends and associated can add your public key to a file called a **key ring**). When someone wants to send you a secure email the sender encrypts their messages with your **public key**. When you receive the email you must decrypt it using your **private key**. Many email programs will automatically verify that the message is authentic. You will need to type in your password to view the message.

Small businesses and organizations that wish to offer transactions over the Internet or Ecommerce can take their chances and set up an unsecured system, set up their own secure server or purchase a service from a third party. There are various types including service that take a percentage of the transaction and/or charge a service fee and/or charge for each transaction. Some organizations are more reliable and you should always shop around before committing to a service. Because this type of service is so new the length of time a company has been operating is not always a way to decide. Things to watch for is downtime. If your companies website is operating properly yet the customer or user can't access the transaction server because it is down, too busy or misconfigured they will easily be put off perhaps entirely. Watch for contracts that lock you in as the market is still developing and prices tend to fluctuate. It is easy to switch services by simply changing the address on your website's order forms.

### 3.4 Security and Websites

As was stated at the beginning of this unit the nature of the Internet is an open system. Having said that there are many reasons and many ways to set up a secure or closed system with in this open framework. Private or member based discussion groups, private files or folders, protected databases, copyright material to name a few all need some way of allowing them to be distributed to the intended recipient only. Also many businesses are creating **Intranets** which are closed systems only

accessible to registered users. An Intranet can provide a way of making company information easily accessible and allow branch offices to communicate with each other easier.

### 3.4.1 Account Security

Your website itself is protected by your ISP's **software**. When you attempt to access your web space to change or modify a file using a **shell** or **ftp** you are challenged to send your username and password. This is the first line of protection and adequate for many website administrators.

### 3.4.2 Server Security

The **server** that your website is installed on is the second line of protection. Most servers have security features built in to them allowing users to password protect folders or build scripts to send a username/password challenge to a user trying to access a file or folder. This allows website administrators the ability to create discussion groups within their site or to place confidential documents or information that is made available only to registered users on their own website. Unfortunately some ISP either don't make this option available, charge a premium to use them or only allow their own employees to set them up.

### 3.4.3 Third Party Security

Another option includes **contracting** the protection of private files to a separate service, pay a third party to hosting a private discussion group or obtain web space on another server that allows access to security options. The entire Internet is as close as your computer connection and whether the file the user is viewing is stored in your own current web space or on another server is usually immaterial. When your customers, employees or members moves from one page to another the consistency of the website is the maintained by the design, not the address of the separate pages. It is also possible to control the address that is displayed if required.

### 3.4.4 Software Security

Another option is to use **JavaScript** or **Java applets** to control how customers or members access secure features. This option is only available to users who are using **Java enabled browsers**. Scripts and applets can control access to documents and databases, create content on the fly based on user input, detect the browser the visitor is using and direct them to the proper page, retrieve cookies and use that information

to determine whether a user has access to a certain area or not, as well as many other uses.

### 3.4.5 Copyright

Copyright is protect using the same process as any original material (books, artwork, film, etc...). Anything that a user gets off the Internet should be treated as privately owned information unless otherwise noted. Anyone posting private information to the Internet should be aware that copyright law is not the same in every country and may be difficult to enforce. It is possible to set up a page that won't be stored on the users computer once they leave the site but that will only slow down not stop users who want to obtain information posted on a website. Notices of copyright are often added to the main page of a website sometimes with a link to a page describing the details of how the content can be used.

### 3.4.6 Updating Software

It is very important to update your software periodically. When a program is released, particular internet browsers, it may contain flaws usually referred to as **bugs**. These bugs may not appear to be a problem but criminals will attempt to use these flaws for their own use. Keeping your software up to date will help keep your computer secure.

## 3.5 Is Security Necessary?

Though you may think that it is not necessary to setup security systems there are many reason to consider it. I have come across a number of examples of people forging documents and email. A digital signature will be the only way to verify whether a document is genuine or not.

Many organizations need to discuss draft articles, changes to bylaws and other documents that could cause problems if they were made public before they are approved. A secure directory within your website is an ideal spot to store sensitive material making it available for members and people who have the proper password.

I would be remiss to not point out and as all discussions on the subject also point out mining the Internet with malicious intent is also possible. One common malicious acts is to search websites for email addresses and then add them to spam distribution lists. Unfortunately there is very little that can be done to counter this other than removing your email address from your web site but this makes it difficult for your customers to contact you.



Whether you decide to add a security component to your web site project initially it is a good idea to think about or have a discussion about web site security when planning the site. You should also review your security systems periodically whether that is changing your password or reviewing and updating your security system.

### **3.6 Customer Security: Basic Principles**

Most e-commerce merchants leave the mechanics to their hosting company or IT staff, but it helps to understand the basic principles. Any system has to meet four requirements:

- Privacy: information must be kept from unauthorized parties.
- Integrity: message must not be altered or tampered with.
- Authentication: sender and recipient must prove their identities to each other.
- Non-repudiation: proof is needed that the message was indeed received.

### **Transactions**

Sensitive information has to be protected through at least three transactions:

- credit card details supplied by the customer, either to the merchant or payment gateway. Handled by the server's SSL and the merchant/server's digital certificates.
- credit card details passed to the bank for processing. Handled by the complex security measures of the payment gateway.
- order and customer details supplied to the merchant, either directly or from the payment gateway/credit card processing company. Handled by SSL, server security, digital certificates (and payment gateway sometimes).

### **3.7 Practical Consequences**

1. The merchant is always responsible for security of the Internet-connected PC where customer details are handled. Virus protection and a firewall are the minimum requirement. To be absolutely safe, store sensitive information and customer details on zip-disks, a physically separate PC or with a commercial file storage service. Always keep multiple back-ups of essential information, and ensure they are stored safely off-site.
2. Where customers order by email, information should be encrypted with PGP or similar software. Or payment should be made by specially encrypted checks and ordering software.

3. Where credit cards are taken online and processed later, it's the merchant's responsibility to check the security of the hosting company's webserver. Use a reputable company and demand detailed replies to your queries.
4. Where credit cards are taken online and processed in real time, four situations arise:

You use a service bureau. Sensitive information is handled entirely by the service bureau, which is responsible for its security. Other customer and order details are your responsibility as in 3 above.

You possess an ecommerce merchant account but use the digital certificate supplied by the hosting company. A cheap option acceptable for smallish transactions with SMEs. Check out the hosting company, and the terms and conditions applying to the digital certificate.

You possess an ecommerce merchant account and obtain your own digital certificate (costing some hundreds of dollars). Check out the hosting company, and enter into a dialogue with the certification authority: they will certainly probe your credentials.

You possess a merchant account, and run the business from your [own server](#). You need trained IT staff to maintain all aspects of security – firewalls, Kerberos, SSL, and a digital certificate for the server (costing thousands or tens of thousands of dollars).

Security is a vexing, costly and complicated business, but a single lapse can be expensive in lost funds, records and reputation. Don't wait for disaster to strike, but stay proactive, employing a security expert where necessary.

Sites on our resources page supplies details.

### **3.8 Tracking the Customer**

Of primary importance in any transaction is that the customer feel comfortable with your communication. To make it seem like the website is talking to each customer individually you must track who the customer is and what they are interested in. The most common way this is achieved on the web is with the shopping cart concept. This allows many different people to be shopping on your site and all have their own sets of items in their cart. In our fax back example you would have to use something like the fax number to keep track of each customer. The equivalent with the web would be the IP number (known as IP tracking). The one major difference is that a customer's fax number doesn't change very often, while a customer's IP number can change every time that

they connect to the Internet -- for those people using dial up accounts or other dynamic addressing situations -- so IP numbers are not a very reliable way to track customers.

Another common tracking technique is cookies. You can have your website put a cookie onto the customer's machine so that it maintains important information, like the contents of their shopping cart. A better technique that I have found is tag propagation. This is a technique in which the first page that someone hits when they enter the site assigns a unique number, something like the number of seconds since 1904. This number is in turn passed thru every page on the site and the shopping cart information is stored in a file with that number on the server. This allows a customer to disconnect (by choice or happenstance) from the Internet and not lose the shopping cart information. This can be very important in situations where buying approval from someone else is required for the purchase. Most of the commercial products include a way of doing this. With WebCatalog you insert a `cart=[cart]` parameter into every HREF and form on your site.

Tracking the customer is very useful not just for the convenience of a shopping cart, but for things like tracking down people that you think are using stolen cards and, more importantly for that allusive goal, to make the site more usable. Correlating this tracking information with the general web server logs can be used to determine trends of the people visiting your site, are they getting all the information they need to make a buying decision, are they understanding the buying process, are they losing interest after a certain amount of time. One big advantage of this tracking log is to look for all the searches that people are doing on your site and where they are not finding any products. Maybe you should describe the products more effectively. All of these answers can help you understand ways to change your site to make it more useful.

### **3.9 Security Concerns**

#### **3.9.1 Areas that Need Security**

As mentioned in the section about SSL we do want to protect the transmission of sensitive information with something like SSL to keep the eavesdroppers away, but another equally important issue for security is protection from attacks on your web server. People trying to find credit card numbers in accounting logs or just trying to steal products, to buy at ridiculously low or free prices. Prevention of this type of security breach is the most overlooked area. Much of the information on the machine should not be allowed any access. You don't want people knowing even about access statistics without you knowing about it.

The first obvious area to secure is the accounting files. Let's say the web server is doing a great job of keeping people out of sensitive areas, but the same machine is also your ftp server. People are prevented by the web server from getting to your accounting log, but maybe there is a security hole because your ftp server software allows access to this log... so my first advice, limit the access protocols to all sensitive data -- 1) store your accounting logs and other sensitive files outside of the web server folder, WebStar and many other web server products will not serve files outside of their folder tree, 2) don't run ftp and other protocol services on the same machine. Also, make sure that if you are delivering electronic product, only the person that bought it, gets it. For this you should either be copying the product to some unique place only that person is given access to or have a one time password scheme allowing only one shot at downloading the product.

The concern of the web server allowing access to files that are sensitive is best taken care of by your disk organization. Below is a screen shot of a sample organization of your web server folder structure using WebStar and WebCatalog:

### **3.9.2 Areas that do not Need Security**

There are many areas within the selection and buying process that are considered public information and therefore don't need security. In fact, the whole process would be slowed down if it sent everything through a SSL server. Imagine if you received a mail-order catalog from MacWarehouse or Club-Mac and you had to put a decoder ring over each letter to figure out what it really was, that would take you hours just to read one page. That is what your browser is doing with SSL data. So, big picture, you only want to use SSL when you are expecting sensitive data from the customer, like a credit card number. Protect that from eavesdroppers with SSL, everything else should go thru the non-SSL server.

## **4.0 CONCLUSION**

E-Commerce is more secure than most business we conduct everyday and is getting better every minute. Knowing various hacking techniques on the Internet and having built an e-Commerce package, if I wanted to get a few credit card numbers I would head for the local bar and go thru the dumpster long before I would start going after websites. Give yourself time to understand and work with your new sales force. A properly constructed website benefits the consumer with up to the minute information and immediate response. The same website serves as hundreds of sales people for the merchant, all trained with exactly the right information as well as access to tracking information etc. The

positive return for the customer and the merchant will help to overcome the myth and fear of the security on the Internet. I would like to end on a observation about most credit cards, even if it is stolen, the owner is only liable for \$50.

- There are a variety of tools on the market to help you construct your eCommerce web site. Each has its own strengths and weaknesses. To choose the best for your needs, you must carefully research the speed and responsiveness of the server under load, how they handle the security areas and your database connectivity needs, do they have to handle a live existing database.

## **5.0 SUMMARY**

i. There is a lot of discussion these days about e-commerce security as more people use email and more services such as banking, mail orders and subscriptions become available through the Internet.

ii. Digital signatures meet the need for authentication and integrity. To vastly simplify matters (as throughout this page), a plain text message is run through a hash function and so given a value: the message digest.

iii. Email can be protected using a service or an application (program). There are others but the two that stand out currently are S/MIME and PGP. S/MIME requires the user to register with a 3 party service which issues a digital id that you attach to your message.

iv. As was stated at the beginning of this unit the nature of the Internet is an open system. Having said that there are many reasons and many ways to set up a secure or closed system within this open framework.

v. Though you may think that it is not necessary to setup security systems there are many reasons to consider it. I have come across a number of examples of people forging documents and email. A digital signature will be the only way to verify whether a document is genuine or not.

vi. Before the Internet, computer security was limited to 'closed systems' or network computers such as offices or banks where only people physically in the office could use the computer system. It was quite easy for the network supervisor to set up user names and passwords and since that time people have become used to logging on before they can use these types of computers or resources.

vii. Most e-commerce merchants leave the mechanics to their hosting company or IT staff, but it helps to understand the basic principles. Any system has to meet four requirements.

viii. Of primary importance in any transaction is that the customer feels comfortable with your communication. To make it seem like the website is talking to each customer individually you must track who the customer is and what they are interested in.

ix. The first obvious area to secure is the accounting files. Let's say the web server is doing a great job of keeping people out of sensitive areas, but the same machine is also your ftp server.

## **6.0 TUTOR-MARKED ASSIGNMENT**

1. Mention five security methods for e-commerce security.
2. Discuss briefly copyright of products over the internet as security measure.

## **7.0 REFERENCES/FURTHER READINGS**

Jay Van Vark eCommerce and the Security Myth.

## **MODULE 3**

Unit 1	E-commerce Challenges
Unit 2	E-commerce in Developing Countries
Unit 3	Government and E-commerce (Case of Developing Countries)
Unit 4	Company Case Study

## **UNIT 1 E-COMMERCE CHALLENGES**

### **CONTENTS**

- 1.0 Introduction
- 2.0 Objectives
- 3.0 Main Content
  - 3.1 Challenges
  - 3.2 Challenges of E-Commerce for Small Businesses
    - 3.2.1 Your potential customers DO NOT trust your site
    - 3.2.2 Your products or services WILL NOT sell themselves
    - 3.2.3 The urge to purchase DOES NOT last long
    - 3.2.4 Customers DO NOT favor stores which are too standard
    - 3.2.5 Your small e-commerce site WILL NOT go unnoticed by hackers
- 4.0 Conclusion
- 5.0 Summary
- 6.0 Tutor-Marked Assignment
- 7.0 References/Further Readings

## **1.0 INTRODUCTION**

E-Commerce causes a profound upheaval in habits, ways of doing business, skills and structures, such that a period of adjustment and learning is required, both at the individual and the institutional level. For e-commerce to be able to develop fully, there are obstacles to be overcome and a number of issues and challenges to be addressed by public and private stakeholders.

## **2.0 OBJECTIVES**

At the end of this unit the student is expected to:

- know the numerous forms of challenges facing e-commerce
- identify the specific challenges of small scale businesses
- know how to overcome the challenges.

## **3.0 MAIN CONTENT**

### **3.1 Challenges**

Electronic commerce still faces many barriers. They include the following:

### **3.1.1 Security of Information Systems**

As e-commerce moves away from propriety networks and toward the open and largely unregulated Internet, there will be increased opportunities for fraud. The issue of fraud and security is not unique to the Internet, however, and some levels of loss will probably be acceptable. Nevertheless the current publicity surrounding the weakness of the Internet have delayed the involvement of many firms.

### **3.1.2 Technology**

Technological problems beyond security must be overcome. At present the Internet is still not as fast as it should be, and still has elements of unreliable delivery mechanism that can make even the most professional market presence appear poorly conceived. For instance, using electronic networks to display graphic images or transfer of sound gives a prospective customer a richer view of the product, but they take a long time to transfer, particularly for users from countries remote from the computer providing the data.

### **3.1.3 Operational**

There are also operational problems to overcome. The availability of worldwide distribution system, though convenient, can often extend a firm's marketing reach beyond its ability to distribute or support. Further, products and brands that are tailored to particular culture or countries may be difficult to differentiate or even inappropriate on a global marketing platform. Dealing with multiple languages is another operational concern as is providing 24 hours a day manned support system.

### **3.1.4 Public Policy Issues**

A variety of public policy issues must also be addressed, and from an international context. One is the issue of privacy in information systems. Customers worry that their purchases behaviour will be available without their permission or that they will be the target of unsolicited mailings. The technical solutions related to the security related to financial transactions, particularly data encryption, raise other public policy issues such as whether a government will let its citizens use a security scheme that cannot be broken by government security specialists. To condone the use of these programs may leave society open to threats from criminals and other governments, as well as from tax avoiders.



### **3.1.5 Intellectual Property**

The protection of intellectual property issues is another concern. The Client/Server structure of the Internet makes it easy to appropriate and modify images, sounds, texts, and the general look and feel of the productions of others. Variations in the protection of the intellectual property from one country to another further complicate the problem. Some areas of e-commerce are also perceived as socially unacceptable in a particular culture. Pornography, gambling, or information on the making of nuclear weapons are uses of the Internet that could lead to attempts to create and enforce regulations. Such regulations though probably difficult to enforce for illegitimate businesses, could nevertheless have negative consequences for legitimate businesses. But, because of the ability to quickly relocate electronic businesses anywhere in the world, regulatory issues are complicated and not readily solved by regulation within any one country.

### **3.1.6 Institutional Resistance**

The magnitude of change that e-commerce will mean for many industries suggests that there will be institutional resistance to protect the status quo and past investments. Such resistance, coupled with the relatively low costs for entry for early participants, will produce many new start-up firms, some of which are likely to be very successful. Industry boundaries are likely to shift and new forms of business evolve. On the other hand these same factors will lead to an increase in the amount of economic disruption experienced by many currently successful firms and industries. Such disruptions are likely to be widespread and painful for many sectors societies and their economies.

### **3.1.7 The Emergence of New Products, New Industries and New Industrial Structures**

Among the changes that will call for adjustments, we should mention the emergence of digital or virtual products that consumers or clients can download in realtime from home, wherever in the world that may happen to be. These goods and services (for example a soundtrack) may, at the client's choice, remain virtual or take on a physical form. Quite apart from the problems such products pose for customs control or intellectual property standards, it is difficult to see how the relationship will evolve between these digital products and the traditional industries with which they are associated, that is, the entertainment industry (books, records, movies etc.) or the software industry. It is still harder to predict how new industries will evolve; a good example is multimedia, whose parameters and characteristics have yet to be defined. Some newly created sectors are also in the throes of change, in particular ISPs

(Internet service providers), which are now undergoing a severe shakeout: the smaller ISPs are having more and more difficulty competing with the biggest ones, who can offer their clients a complete range of services (modem or cable connection, ADSL technology (Asymmetric Digital Subscriber Line), satellite links, etc. e-Commerce also brings about a reorganization of value chain activities and an improvement in the business process between partners

### **3.1.8 Accessibility to Infrastructure, Technologies and Practical Technological Knowledge**

How accessible is the electronic world? Though there was a time when networking hardware and software were costly, even for big companies, SMEs can now afford to set up an intranet or connect to an extranet. Technological solutions like 3Com's Office Connect or CISCO's DSL 1401 are now well within their reach. As for the Internet, it is still one of the least costly technology tools, particularly in Canada, where access rates are the lowest in the G7 countries. However, the growing popularity of this communications network is causing transmission capacity and access problems. But here too there are technological solutions. For instance, the so-called second-generation.

Internet is already reaching speeds of 2.5 GB/s on large backbones, and the speed is expected to be close to the terabit range (10<sup>12</sup> bits per second) in the third generation, while ISPs are already using "mirrors" or "data caching" to reduce congestion. Access to telecommunications infrastructures (including access to Internet), then, no longer seems to be a major obstacle, whatever the size of the company either financially or technologically, at least in industrialised countries.

However, transition economies still display an uneven distribution of international telecommunications capacities and access to more appropriate and reliable national information infrastructure (NII) at lower costs will have to be greatly improved. Some transitions economies have made rapid progress, for instance China with already some four million Internet users in 1999 and projected 20 to 40 million users by 2003. Compatibility and interoperability problems, however, even at the level of the data format, are of more concern, and they have yet to be resolved. It is still difficult, for example, to exchange engineering drawings between companies if they are using different CAD systems. Nevertheless, clear progress has already been made: the open TCP/IP protocol has made the Internet a universally accessible, worldwide platform and the STEP standard has become the dominant design for interfirm technical data exchange. Thus, it can be said that the efforts now being made will gradually enable compatibility and interoperability problems, which now make access to the electronic

world rather user-hostile, to be overcome. Transition economies may in fact experience quantum leaps as these problems tend to disappear. For instance, private network electronic data interchange (EDI), which accounts for 86% of private network electronic data interchange (EDI), which accounts for 86% of total B-to-B e-commerce in the US, will drop to 10% by 2003 based on the projections made by the Boston Consulting Group. Internet-based transactions, (which are easier to use, more flexible and less costly than EDI) will increasingly constitute the bulk of B-to-B e-commerce up to 90% of total B-to-B e-commerce in the US by 2003. How secure is e-commerce?

Electronic data protection requires four levels of security, that is: confidentiality, integrity, authentication and non-repudiation. Cryptographic techniques, electronic signatures, public and private keys and the use of virtual private networks (secure private gateways linking intranets and/or extranets over the Internet) are all already in use to ensure information security. Some e-commerce applications, such as electronic funds transfer, have now become very reliable. Every day, a quintillion dollars changes hand in electronic exchanges in a manner that is deemed to be secure (Huber, 1997). That being said, it is clear that the electronic world opens the door to the possibility of fraud. The various levels of government, the banking sector and the various certification organisations are now attempting to minimise that possibility, but until a satisfactory solution is found, it will be essential to evaluate and adopt some of the existing security technologies. Practical knowledge about the existence and use of these leading-edge technologies represents a major stumbling block for transition economies.

### **3.1.9 Skilled Labour**

How available are people with the requisite skills to ensure the development of e-commerce? The shortage of specialised labour seems to be much the most serious issue. Not only does e-commerce bring about changes in certain professions, for instance marketing, where the introduction of promotional tools designed for the Web necessitated some adjustments, but it also calls for new skills and requires new information technology specialists to be trained. And, as various studies have shown, the personnel shortage is far from being met, the gap between supply and demand being quite considerable. According to the US Bureau of Labor Statistics, there is room in the US for 1.3 million more IT-related jobs 1996 and 2006 (Margherio et al., 1998). Developing countries with increased adoption of e-commerce applications will probably face a severe skilled labour shortage.

### **3.1.10 The Role of Governments**

The governments of many countries are increasingly interested in e-commerce, for a number of reasons. First, its economic importance is growing. Forrester Research estimated that the income generated by Internet-based e-commerce was likely to increase from US\$50 billion to US\$3,200 billion by 2002. And this figure could be just the tip of the iceberg, since it covers just one medium (the Internet) and one economic activity, that is, the sale of goods and services. Even though it is difficult to predict exactly what role e-commerce will play in the future, it is clear that the phenomenon is real and is due to grow at an accelerating rate. Secondly, governments see e-commerce as an excellent tool for stimulating economic growth and generating employment. Thus, many countries have also drawn up an action plan designed to foster the growth of e-commerce. Thirdly, it is unthinkable to let multinationals and other enterprises decide what the operating rules of e-commerce will be. The problem governments have to tackle is a complex one: to adapt commercial practices, their legislative corpus and tax rules to a new, electronic environment. This problem, which is still far from being solved, calls for national and international co-operation. Finally, the transition to a digital or virtual economy is unlikely to go smoothly. True, jobs will be created, but others will disappear, though the overall effect is likely to be positive. The objective of government policy in this area, therefore, is to attenuate the negative effects of e-commerce while maximising its beneficial ones.

### **3.1.11 E-Commerce: Making up for Lost Time?**

A large number of businesses, organisations and institutions are already carrying on one or more of their activities by electronic means. The degree of sophistication of these activities ranges from simple substitution (for example, replacement of telephone calls by e-mail) to the process of managing interfirm business. What about businesses in transition economies? Are they behind companies in industrialised countries? The answer seems to be yes, though it needs to be qualified because of the meagre information available and the absence of reliable indicators.

According to some organisations (OECD, 1999; IDC, 1998, 1999), the US now generates nearly 80% of the worldwide total e-commerce revenues from the Internet. Canada is second with 5% of the revenues, while Western Europe, led by the UK and Scandinavia, takes in 10% of the world total. In each of the major general public e-commerce categories on the Internet (entertainment, shopping, finance etc.), the US is on top, with 67% to 85% of the most popular sites, followed by Canada (OECD, 1999). These few figures give only a partial indication of the importance of Internet-based e-commerce. They do however indicate clearly that transition economies are lagging behind considering

their relative economic and demographic weight. It is imperative for transition economies to position themselves in the new economic order, since the productivity gains generated by e-commerce are so great that it is now impossible to return to the old ways.

Furthermore, the pressure exerted by certain very powerful actors leaves business from transition economies with no choice but to get up to speed. For example, the multinationals, whose earnings often exceed the gross domestic product (GDP) of certain entire countries (UNDP, 1997), are playing a powerful role. They make the concept of national (UNDP, 1997), are playing a powerful role. They make the concept of national sovereignty meaningless by operating in whatever country offers the most favourable conditions. Many of their activities are already 'virtualised' and they will more and more often be expecting as much of their suppliers and subcontractors. Multinationals, then, are spearheading the move to e-commerce. Technological issues pertaining to the first, second and fifth waves of the transition model are particularly acute in the near future for a number of reasons. First, e-commerce will represent a major component of international trade with an estimated share of 15 % to 25 % by 2003 (UNCTAT, 2000). Second, business-to-business e-commerce is likely to continue to have much more impact than business-to-consumer e-commerce. Third, the services traded electronically will remain a small portion of business to business e-commerce (roughly less than 14% by 2002). Technological issues will have to be met by manufacturing firms from most countries and are particularly relevant for many developing countries that rely on exports of semi-manufactured or manufactured goods.

### **3.2 Challenges of E-Commerce for Small Businesses**

Based on experience, we identify five challenges applicable to most cases. Store owners can usually arrive at the same conclusions through trial and error, but in e-commerce the long way is always the expensive way. The best option is then to learn from the success of other on-line stores.

#### **3.2.1 Your Potential Customers DO NOT Trust Your Site**

The Internet allows mom-and-pop websites to look just as good maybe even better than the websites of large corporations. All potential customers are well aware of this and they will be unimpressed by a sophisticated layout and a professional logo. Potential customers DO

NOT trust the site they have just arrived at, and it must be your conscious decision to do what it takes to make them change their minds. Start by displaying a physical address, a telephone number, and a list of people behind the site. Consider joining forces with other websites that will create legitimacy for your own. If you can get your suppliers and distributors to mention you on their websites, this will surely make your business appear more trustworthy. Join a best practices organization such as the Better Business Bureau, or a privacy certification program such as Truste. Encourage and provide the means for your customers to review your products or services under their name and company. Publish success stories, always making sure the author is clearly identified. And most importantly: answer all pre-sales questions fully and in a timely manner. Many potential customers will contact you with very basic questions, or for information already provided in your FAQ section, just to test your company's responsiveness. Allocate the necessary resources to assure quick, personalized and courteous responses to all pre-sales inquiries.

### **3.1.2 Your Products or Services WILL NOT Sell Themselves**

An alarming number of e-commerce store owners believe in the following equation blindly:

$$\text{Traffic} + \text{Good Prices} = \text{Sales}$$

Unfortunately, the reality is much more complex than that. Your products or services WILL NOT sell themselves. Even if you have a significant number of visitors and the lowest price, potential customers may choose to purchase elsewhere on the web. Why is that? Maybe other sites have invested more resources to showcase the same product. Make sure your shopping cart allows you to present products and services like you want them to be seen. If you need five images per item, a long description including HTML formatting, multiple categories, external links and reviews, adapt the application to suit your needs rather than adapting your business to the limitations of the shopping cart. Also, add your own unique text to the standard product descriptions provided by the manufacturer or supplier. If you feel you don't have the skills to create attractive descriptions for your products, hire a writer you can afford at Guru. Make an effort to get the lowest possible shipping rates or offer free shipping, and publish rates along with shipping delays before the customer checks out. Displaying your products and services fully and thoroughly, investing time and efforts, will help the products on your website outshine the same products offered elsewhere on the web, boost your reliability, and rank your website in search engines.

### **3.1.3 The Urge to Purchase DOES NOT Last Long**

Even if a potential customer finds your site, comes to trust your business, and feels compelled to purchase your products or hire your services, that urge DOES NOT last long. Therefore, your website must be designed to let it flow and enjoy it while it lasts. The information required at each step, and the number of steps proper, must be as little and as few as possible. If you sell downloadable software, prompting for a shipping address is definitely a waste of precious time. The shopping cart you have purchased may boast thousands of features, but one of the few features which will truly make a difference in terms of sales is a short and simple checkout. Even if you have already invested in a design or in a shopping cart program with an inconvenient checkout, weigh in the revenue you are missing out on due to a bad decision when you set up your business. Don't hesitate to switch providers. When you do, remember that the ideal checkout that will make the most of customers' urge to buy is one where the process is complete with three screens: product view, input of customer and payment information, and confirmation. The simpler, the better. If you have no choice but to present a more complex process, make sure it is not too removed from the ideal three-step model.

### **3.1.4 Customers DO NOT Favor Stores which are too Standard**

Many small stores don't have a budget to hire a consultant that will devise a custom strategy, so they settle for standard tools. Instead of hiring a web designer, they purchase a template. Instead of purchasing an exclusive template, they purchase a shared template that can be seen everywhere on the web. Instead of developing a custom e-commerce application, or customizing an existing one, they use a standard e-commerce service provided by the hosting company. A direct consequence is that potential customers perceive a lack of commitment by the company to adapt standard tools and create a unique purchasing experience. Therefore, the relationship of trust is not created and the urge to buy is hampered. This means it is crucial to adapt standard tools: the look of the shopping cart should match the overall look of the site, and the functionality must be in line with store requirements (going back to the example above, stores selling digital goods must not prompt for shipping information or quote shipping rates). If you lack the necessary resources, hire a programmer or designer at Rentacoder. There you can post your job and available budget, and receive bids by programmers willing to take up your project.

### **3.2.5 Your Small E-commerce Site WILL NOT go Unnoticed by Hackers**

Even if you have overcome the difficulties of setting up your site and you are happy with your sales, there may still be trouble ahead:

e-commerce sites are one of the favorite targets of hackers. If you think your site is not relevant enough to catch their attention, you are wrong, and this way of thinking will not help you prepare to face related risks. All e-commerce sites, even those which sell one product a week, are the target of multiple attacks. Some attacks are not successful at all, others have some level of success, and others are so successful that the consequences for the owner of the store can be devastating. The main purpose of hackers is to get customer information and credit card data, redirect payments, and obtain products free of charge or at a lower price. If a hacker steals your customer database and sells it to spammers, the reputation of your site will be ruined. Not to mention what will happen if the hacker commits fraud with the credit card data.

Hackers who attack e-commerce sites randomly usually don't take the time to devise specific ways to intrude. They simply determine which shopping cart and payment method are used, they try to access with default passwords, they look for databases in their standard locations, and they try to intrude the database by means of a common attack known as SQL Injection. If their attempts are not fruitful, they just move on to the next potential victim. So, in terms of security it is not absolutely necessary to have a big budget and hire an expert, either. The key lies in your attitude: define complex passwords, customize your shopping cart installation (change the location of the control panel, change passwords, change the location of the database), and check that the versions of the software you use for your web server, FTP server, database and shopping cart don't have any known and patched vulnerabilities.

Last but not least: keep informed; stay in touch with software vendors and visit websites where security issues are reported, such as NewOrder. This will minimize the chances that security in your site is compromised, and you will be able to focus on your real target: selling more and selling better.

#### **4.0 CONCLUSION**

E-Commerce, though it is still in an embryonic condition, is growing rapidly and is likely to have a dominant position in the knowledge economy of tomorrow. Already, its economic impact is much greater than was predicted not so long ago, as it is not limited to the Internet – which, though its role as a catalyst is important, is only one of the media involved. Governments from industrialised and developing countries see e-commerce as very important, as it constitutes a promising instrument of economic growth and a far from negligible job creation tool.

The business community, for its part, cannot stand aloof from this new



trading dynamic: they must take advantage of the many opportunities offered by e-commerce. Even though the obstacles are considerable and there are many challenges to be met, ignoring this new form of trade is hardly a viable solution. The lag we now observe in the corporate world, and particularly among SMEs and their larger counterparts, and, among industrialized economies and transition economies, has to be addressed as quickly as possible. e-Commerce is no longer a 'virtual' reality, but a concrete one, and has to be dealt with on many fronts: legal, fiscal, economic and social issues require urgent actions. This paper has focused on technological issues and challenges that require priority attention.

Clearly, the need to enhance the level of practical technological knowledge from the perspective of businesses is a must for all economies, including transition economies.

## **5.0 SUMMARY**

i.E-Commerce causes a profound upheaval in habits, ways of doing business, skills and structures, such that a period of adjustment and learning is required, both at the individual and the institutional level.

ii.As e-commerce moves away from propriety networks and toward the open and largely unregulated Internet, there will be increased opportunities for fraud. The issue of fraud and security is not unique to the Internet, however, and some levels of loss will probably be acceptable. Nevertheless the current publicity surrounding the weakness of the Internet have delayed the involvement of many firms.

iii.The magnitude of change that e-commerce will mean for many industries suggests that there will be institutional resistance to protect the status quo and past investments.

iv.The governments of many countries are increasingly interested in e-commerce, for a number of reasons. First, its economic importance is growing.

v.A large number of businesses, organisations and institutions are already carrying on one or more of their activities by electronic means. The degree of sophistication of these activities ranges from simple substitution (for example, replacement of telephone calls by e-mail) to the process of managing interfirm business.

vi.Based on experience, we identify five challenges applicable to most cases. Store owners can usually arrive at the same conclusions through trial

and error, but in e-commerce the long way is always the expensive way. The best option is then to learn from the success of other on-line stores.

vii. Even if you have overcome the difficulties of setting up your site and you are happy with your sales, there may still be trouble ahead: e-commerce sites are one of the favorite targets of hackers.

## 6.0 TUTOR-MARKED ASSIGNMENT

Mention ten forms of challenges faced by e-commerce.

## 7.0 REFERENCES/FURTHER READINGS

Brown, E. (1999). *"The E-Corporation: 9 ways to win on the Web"*, Fortune, 24 May, p. 112–125.

European Commission, Communication to the European Parliament, to the Council, to the Economic and Social Committee and the Committee of the Regions: A European Initiative in Electronic Commerce, March 15, 1997.

Handwick, M. Spooner, D.L. K C Morris, K. C., *"Data Protocols for the Industrial Virtual Enterprise"*, IEEE Internet Computing, January-February 1997.

Huber, P., "Cyberpower", *Forbes*, December 1997.

IDC Canada, *Internet Commerce in Canada: 1997-2002*, August 1998.

IDC (International Data Corporation), *The Internet and Internet Commerce Defined*, presentation by J. Greene, Director, Telecommunications and Internet Research, February 1999. Illinois Agricultural Experiment Station, Virtual Agriculture:

*Developing and Transferring Agriculture Technology in the 21st Century*, University of Illinois, 1997.

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

Lefebvre, L. A., Lefebvre, É., Mohnen, P. (Eds.), (2000). *Doing Business in the Knowledge-Based Economy: Facts and Policy Challenges*, Kluwer Academic Publishers, Nowell, Ma, U.S.A.

Margherio, L., Henry, D., Cook, S., Montes, S., (1998). *The Emerging Digital Economy*, Department of Commerce,.

NGM, Next Generation Manufacturing. A Framework for Action,

Agility Forum, 1997.

OECD, *The Economic and Societal Impacts of Electronic Commerce: Preliminary Findings and Research Agenda*, February 1999.

Quinn, J.B., (1992). *Intelligent Enterprise*, The Free Press, New York.

UNCTAD (United Nations Conference on Trade and Development), Building Confidence: *Electronic Commerce and Development*, United Nations, 2000. UNDP, Human Development Report, 1997.

Louis A Lefebvre and Élisabeth Lefebvre; *Technological Issues and Challenges Facing e-Commerce and Virtual Enterprises*.

The Blackwell Encyclopedia of Management, Vol. 111, *Management Information Systems*, Edited by Gordon B. Davis.

## **UNIT 2    E-COMMERCE IN DEVELOPING COUNTRIES**

### **CONTENTS**

- 1.0    Introduction
- 2.0    Objectives

3.0	Main Content
3.1	ICT-4-BUS: Helping SMEs Conquer the E-Business Challenge
3.2	How is E-Commerce Useful to Developing Country Entrepreneurs?
3.3	What is the Extent of ICT Usage among Smes in Developing Countries?
3.4	What are the Obstacles, Problems and Issues Faced by Smes in their Use of ICT in Business or in Engaging in E-Commerce?
3.	<b><i>Is E-Commerce Helpful to the Women Sector? How has it helped in Empowering Women?</i></b>
4.0	Conclusion
5.0	Summary
6.0	Tutor-Marked Assignment
7.0	References/Further Readings

## **1.0 INTRODUCTION**

***How important is e-commerce to SMEs in developing countries? How big is the SME e-business market?***

For SMEs in developing countries e-commerce poses the advantages of reduced information search costs and transactions costs (i.e., improving efficiency of operations-reducing time for payment, credit processing, and the like). Surveys show that information on the following is most valuable to SMEs: customers and markets, product design, process technology, and financing source and terms. The Internet and other ICTs facilitate access to this information.<sup>43</sup> In addition, the Internet allows automatic packaging and distribution of information (including customized information) to specific target groups.

However, there is doubt regarding whether there is enough information on the Web that is relevant and valuable for the average SME in a developing country that would make investment in Internet access feasible. Underlying this is the fact that most SMEs in developing countries cater to local markets and therefore rely heavily on local content and information. For this reason, there is a need to substantially increase the amount and quality of local content (including local language content) on the Internet to make it useful especially to low-income entrepreneurs.

## **2.0 OBJECTIVES**

At the end of this unit the student is expected to:

- know the importance of e-commerce to SMEs

- understand how the ICT-4 program has helped to conquer e-commerce/business challenges
- know in what ways e-commerce has been useful to small scale businesses in developing countries
- know the extent to which e-commerce is in use in SMEs
- identify the challenges and obstacles faced by SMEs in using e-commerce
- answer the question of how helpful is e-commerce to women sector.

### **3.0 MAIN CONTENT**

#### **3.1 ICT-4-BUS: Helping SMEs Conquer the E-Business /Commerce Challenge**

The Information and Communication Technology Innovation Program for E-business and SME Development, otherwise known as the ICT-4-BUS, is an initiative by the Multilateral Investment Fund and the Information Technology for Development Division of the Inter-American Development Bank (IDB) to enhance the competitiveness, productivity and efficiency of micro-entrepreneurs and SMEs in Latin America and the Caribbean through the provision of increased access to ICT solutions. This is in line with the regional and worldwide effort to achieve a viable “information society.” Programs and projects under this initiative include the dissemination of region-wide best practices, computer literacy and training programs, and coordination efforts to facilitate critical access to credit and financing for the successful implementation of e-business solutions. The initiative serves as a strategic tool and a vehicle for maximizing the strong SME e-business market potential in Latin America manifested in the \$23.51 billion e-business revenues reached among Latin American SMEs.

E-Marketer estimates that SME e-business revenues will increase: from \$6.53 billion to \$28.53 billion in Eastern Europe, Africa and the Middle East combined; \$127.25 billion in 2003 to \$502.69 billion by 2005 in the Asia-Pacific region; \$23.51 billion in 2003 to \$89.81 billion by 2005 in Latin America; from \$340.41 billion in 2003 to \$971.47 billion by 2005 in Western Europe; and from \$384.36 billion in 2003 to \$1.18 trillion by 2005 in Northern America.

#### **3.2 How is E-Commerce Useful to Developing Country Entrepreneurs?**

There are at least five ways by which the Internet and e-commerce are useful for developing country entrepreneurs:

1. It facilitates the access of artisans and SMEs to world markets.

2. It facilitates the promotion and development of tourism of developing countries in a global scale.
3. It facilitates the marketing of agricultural and tropical products in the global market.
4. It provides avenues for firms in poorer countries to enter into B2B and B2G supply chains.
5. It assists service-providing enterprises in developing countries by allowing them to operate more efficiently and directly provide specific services to customers globally.

### **Case 1: IFAT: Empowering the Agricultural Sector through B2C E-Commerce**

The International Federation for Alternative Trade (IFAT) is a collective effort to empower the agricultural sector of developing countries. It is composed of 100 organizations (including 70 organizations in developing countries) in 42 countries. Members of the organization collectively market about \$200-400 million annually in handicrafts and agricultural products from lower income countries. In addition, IFAT provides assistance to developing country producers in terms of logistical support, quality control, packing and export.

### **Case 2: Offshore Data Processing Centers: E-commerce at Work in the Service Sector**

Offshore data processing centers, which provide data transcription and “back office” functions to service enterprises such as insurance companies, airlines, credit card companies and banks, among others, are prevalent in developing countries and even in low wage developed countries. In fact, customer support call centers of dot-coms and other ICT/e-commerce companies are considered one of the fastest growing components of offshore services in these countries. India and the Philippines pride themselves in being the major locations of offshore data entry and computer programming in Asia, with India having established a sophisticated software development capability with highly skilled personnel to support it.

Developing country SMEs in the services sector have expanded their market with the increased ability to transact directly with overseas or international customers and to advertise their services. This is especially true for small operators of tourism-related services. Tourism boards lend assistance in compiling lists of service providers by category in their Web sites.

In addition, for SMEs in developing countries the Internet is a quick, easy, reliable and inexpensive means for acquiring online technical

support and software tools and applications, lodging technical inquiries, requesting repairs, and ordering replacement parts or new tooling.

The Internet is also instrumental in enabling SMEs in developing countries to join discussion groups with their peers across the globe who are engaged in the same business, and thereby share information, experiences and even solutions to specific technical problems. This is valuable especially to entrepreneurs who are geographically isolated from peers in the same business.

### **3.3 What is the Extent of ICT Usage among SMEs in Developing Countries?**

Currently the Internet is most commonly used by SME firms in developing countries for communication and research; the Internet is least used for e-commerce. E-mail is considered an important means of communication. However, the extent of use is limited by the SMEs' recognition of the importance of face-to-face interaction with their buyers and suppliers. The level of confidence of using e-mail for communication with both suppliers and buyers increases only after an initial face-to-face interaction. E-mail, therefore, becomes a means for maintaining a business relationship. It is typically the first step in e-commerce, as it allows a firm to access information and maintains communications with its suppliers and buyers. This can then lead to more advanced e-commerce activities.

ICT usage patterns among SMEs in developing countries show a progression from the use of the Internet for communication (primarily e-mail) to use of the Internet for research and information search, to the development of Web sites with static information about a firm's goods or services, and finally to use of the Internet for e-commerce.

#### **Case 3: E-Mail and the Internet in Developing Countries**

To date, e-mail is the predominant and most important use of the Internet in developing countries. In Bangladesh, 82% of Internet use is attributed to e-mail, vis-à-vis 5% in the United States. The Web accounts for about 70% of Internet use in the U.S.<sup>51</sup> This is due to the relatively high Internet access costs in most developing countries. However, the Internet is considered an inexpensive, although imperfect, alternative to the telephone or facsimile machine-i.e., it is inexpensive due to the higher speed of information transmission, and imperfect because it does not provide two-way communication in real time unlike the telephone.



Many firms use the Internet to communicate with suppliers and customers only as a channel for maintaining business relationships. Once firms develop a certain level of confidence on the benefits of e-mail in the conduct of business transactions and the potential of creating sales from its use, they usually consider the option of developing their own Web site.

Studies commissioned by The Asia Foundation on the extent of ICT use among SMEs in the Philippines, Thailand and Indonesia, show common use patterns, such as:

- wide use of the Internet for e-mail because of the recognized cost and efficiency benefits;
- use of Web sites more for promotion than for online sales or e-commerce, indicating that SMEs in these countries are still in the early stages of e-commerce;
- common use of the Internet for basic research; and
- inclination to engage more in offline transactions than in e-commerce because of security concerns.

SMEs go through different stages in adopting e-commerce. They start with creating a Web site primarily to advertise and promote the company and its products and services. When these firms begin generating traffic, inquiries and, eventually, sales through their Web sites, they are likely to engage in e-commerce.

#### **Case 4: Women and Global Web-Based Marketing: The Case of the Guyanan Weavers' Cooperative**

The Guyanan Weavers' Cooperative is an organization founded by 300 women from the Wapishana and Macushi tribes in Guyana, northern South America. The cooperative revived the ancient art of hammock weaving using 19th century accounts and illustrations of the hammocks made by European travelers and the cultivation of cotton on small family plots and hand-weaving. The organization then hired someone to create a Web site, which was instrumental in bringing their wares online. Not long after, in the mid-1990s, the group of weavers (the Rupununi Weavers Society) was able to sell hammocks to Queen Elizabeth, Prince Philip, the Smithsonian Institute, and the British Museum. Since 1998, they have sold about hammocks through the Internet at \$1,000 per piece. This case also shows that SMEs have great potential to compete in markets for high-end, bespoke products despite the low sales volume.

In addition, many Web sites providing market and technical information, agronomic advice and risk management tools for SMEs (to



coffee and tea farmers in developing countries, for example) have emerged.

### **3.4 What are the Obstacles, Problems and Issues Faced by SMEs in Their Use of ICT in Business or in Engaging in E-Commerce?**

According to recent surveys conducted in select Southeast Asian countries, the perceived external barriers to e-commerce include the unfavorable economic environment, the high cost of ICT, and security concerns. The internal barriers are poor internal communications infrastructure within SME firms, lack of ICT awareness and knowledge as well as inadequacy of ICT-capable and literate managers and workers, insufficient financial resources, and the perceived lack of relevance or value-added of ICTs to their business.

In general, the main issues of concern that acts as barriers to the increased uptake of information technology and e-commerce are the following:

- **Lack of awareness and understanding of the value of e-commerce**

Most SMEs in developing countries have not taken up e-commerce or use the Internet because they fail to see the value of e-commerce to their businesses. Many think e-commerce is suited only to big companies and that it is an additional cost that will not bring any major returns on investment.

- **Lack of ICT knowledge and skills**

People play a vital role in the development of e-commerce. However, technology literacy is still very limited in most developing countries. There is a shortage of skilled workers among SMEs, a key issue in moving forward with using information technology in business. There are also doubts about whether SMEs can indeed take advantage of the benefits of accessing the global market through the Internet, given their limited capabilities in design, distribution, marketing, and post-sale support. While the Internet can be useful in accessing international design expertise, SMEs are not confident that they can command a premium on the prices for their goods unless they offer product innovations. They can, however, capitalize on returns on the basis that they are the low cost providers.

Furthermore, more often than not, the premium in design has already been captured-for example, in the textile products industry-by the

branded fashion houses. SMEs doubt whether Web presence will facilitate their own brand recognition on a global scale.<sup>54</sup>

### **Financial costs**

Cost is a crucial issue. The initial investment for the adoption of a new technology is proportionately heavier for small than for large firms. The high cost of computers and Internet access is a barrier to the uptake of e-commerce. Faced with budgetary constraints, SMEs consider the additional costs of ICT spending as too big an investment without immediate returns.

Many SMEs find marketing on the Internet expensive. Having a Web site is not equivalent to having a well-visited Web site. One reason is that there may be no critical mass of users. Another reason is the challenge of anonymity for SMEs. Because of the presence of numerous entrepreneurs in the Internet, it seems that brand recognition matters in order to be competitive. Moreover, it is not enough that a Web site is informative and user-friendly; it should also be updated frequently. Search engines must direct queries to the Web site, and news about the site must be broadly disseminated. Significantly, the experience of many OECD countries attests to the fact that the best e-marketing strategies are not better substitutes for the conventional form of media. One solution may be to encourage several SMEs to aggregate their information on a common Web site, which in turn would have the responsibility of building recognition/branding by hyperlinking or updating, for example.

- **Infrastructure**

The national network/physical infrastructure of many developing countries is characterized by relatively low teledensity, a major barrier to e-commerce. There are also relatively few main phone lines for business use among SMEs.

- **Security**

Ensuring security of payments and privacy of online transactions is key to the widespread acceptance and adoption of e-commerce. While the appropriate policies are in place to facilitate e-commerce, lack of trust is still a barrier to using the Internet to make online transactions. Moreover, credit card usage in many developing countries is still relatively low.

Also, consumers are reluctant to use the Internet for conducting transactions with SMEs due to the uncertainty of the SMEs' return policy and use of data.

- **Other privacy - and security-related issues**

While security is commonly used as the catch-all word for many different reasons why individuals and firms do not engage in extensive e-commerce and use of Internet-based technologies, there are other related reasons and unresolved issues, such as tax evasion, privacy and anonymity, fraud adjudication, and legal liability on credit cards. In many countries, cash is preferred not only for security reasons but also because of a desire for anonymity on the part of those engaged in tax evasion or those who simply do not want others to know where they are spending their money. Others worry that there is lack of legal protection against fraud (i.e., there is no provision for adjudicating fraud and there may be no legal limit on liability, say, for a lost or stolen credit card). It is necessary to distinguish these concerns from the general security concerns (i.e., transaction privacy, protection and security) since they may not be addressed by the employment of an effective encryption method (or other security measure).

### ***3.5 Is E-Commerce Helpful to the Women Sector? How has it helped in Empowering Women?***

In general, the Internet and e-commerce have empowered sectors previously discriminated against. The Guyanan experience can attest to this.

Women have gained a foothold in many e-commerce areas. In B2C e-commerce, most success stories of women-empowered enterprises have to do with marketing unique products to consumers with disposable income. The consumers are found largely in developed countries, implying that there is a need for sufficient infrastructure for the delivery of products for the business to prosper and establish credibility. For example, if an enterprise can venture into producing digital goods such as music or software that can be transmitted electronically or if such goods can be distributed and/or delivered locally, then this is the option that is more feasible and practicable.

Aside from the Guyanan experience, there are many more successful cases of e-commerce ventures that the women sector can emulate. Some concrete examples are: Tortasperu.com a business involving the marketing cakes in Peru run by women in several Peruvian cities; Ethiogift involving Ethiopians buying sheep and other gifts over the Internet to deliver to their families in other parts of the country, thereby

dispensing with the physical delivery of goods abroad; and the Rural Women's Association of the Northern Province of South Africa, which uses the Web to advertise its chickens to rich clients in Pietersburg.

While most of the examples involve B2C e-commerce, it must be noted that women are already engaged in wholesale distribution businesses in developing countries. Thus, they can begin to penetrate B2B or B2G markets.

### **Case 5: Women Empowerment in Bangladesh: The Case of the Grameen Village Phone Network**

The Grameen Village Phone Network is a classic example of women's empowerment in Bangladesh. Operators of the village phones are all poor women (who have been selected for their clean and strong credit record). These village phones are regularly visited by members of male-dominated villages. Notably, the women entrepreneurs (village operators) enjoy wider discretion in expending their profits from their phone services than with their household income.

## **4.0 CONCLUSION**

*E-commerce has indeed played significant roles in developments in developing countries. Information and communications technology will continually drive e-commerce which in turn aid entrepreneurs to reach out to the global market. The women group will continue to benefit from e-commerce initiatives thereby empowering themselves and their family.*

## **5.0 SUMMARY**

iii. For SMEs in developing countries e-commerce poses the advantages of reduced information search costs and transactions costs (i.e., improving efficiency of operations-reducing time for payment, credit processing, and the like).

iv. The Information and Communication Technology Innovation Program for E-business and SME Development, otherwise known as the ICT-4-BUS, is an initiative by the Multilateral Investment Fund and the Information Technology for Development Division of the Inter-American Development Bank (IDB) to enhance the competitiveness, productivity and efficiency of micro-entrepreneurs and SMEs in Latin America and the Caribbean through the provision of increased access to ICT solutions.

v. There are at least five ways by which the Internet and e-commerce are useful for developing country entrepreneurs.

vi. Currently the Internet is most commonly used by SME firms in developing countries for communication and research; the Internet is least used for e-commerce.

vii. To date, e-mail is the predominant and most important use of the Internet in developing countries.

viii. According to recent surveys conducted in select Southeast Asian countries, the perceived external barriers to e-commerce include the unfavorable economic environment, the high cost of ICT, and security concerns.

ix. In general, the Internet and e-commerce have empowered sectors previously discriminated against.

## **6.0 TUTOR-MARKED ASSIGNMENT**

1. Mention five ways in which e-commerce is valuable to entrepreneurs in developing countries.
2. Discuss briefly the impact of e-commerce on the women sector using the Guyanan experience.

## **7.0 REFERENCES/FURTHER READINGS**

Anita Rosen, *The E-commerce Question and Answer Book* (USA: American Management Association, 2000).

MK, Euro Info Correspondence Centre (Belgrade, Serbia), "E-commerce-Factor of Economic Growth."

Thomas L. Mesenbourg, *Measuring Electronic Business: Definitions, Underlying Concepts, and Measurement Plans*.

Definition adapted and expanded from Emmanuel Lallana, Rudy Quimbo, Zorayda Ruth Andam, *ePrimer: An Introduction to eCommerce* (Philippines: DAI-AGILE, 2000).

Lallana, Quimbo, Andam, 4. Cf. Ravi Kalakota and Andrew B. Whinston, *Electronic Commerce: A Manager's Guide* (USA: Addison Wesley Longman, Inc., 1997).

"*E-commerce/Internet: B2B: 2B or Not 2B?*" (Goldman Sachs Investment Research, November 1999), v. 1.1.  
TA Project, "*E-commerce*".

Traderinasia.com; available from

<http://www.traderinasia.com/classifieds.html>; Internet; accessed 26 September 2002.

whatis.com, searchWebServices.com; available from <http://whatis.com/>

Michael Chait, *"Is the Dot Com Bust Coming to an End?"* (July 8, 2002).

Reshma Kapadia, "What caused the dot-com bust?"

Reid Goldsborough, *"Viewpoint-Personal Computing: Forget the Dot-Com Bust, There's Still Money to Be Made"*.

whatis.com, searchEBusiness.com.

Lynda M. Applegate, *excerpts from the E-business Handbook* (The St. Lucie Press, 2002).

Suganthi, Balachandher and Balachandran, *"Internet Banking Patronage: An Empirical Investigation of Malaysia"*

Andrea Goldstein and David O'Connor, *E-commerce for Development: Prospects and Policy Issues*, (OECD Development Centre, September 2000).

Noah Elkin, *"Developing Countries Meeting E-business Challenge,"* February 5, 2003.

Emmanuel Lallana, Patricia J. Pascual, and Zorayda Ruth Andam, *SMEs and E-commerce: The Philippine Case*; Cf. *SMEs and E-commerce: The Case of Indonesia*, prepared for The Asia Foundation by Castle Asia.

Nancy Hafkin and Nancy Taggart, *"Gender, Information Technology, and Developing Countries: An Analytical Study,"* June 2001.

Department of Trade and Communications. *"An Infocomms Policy for the Information Economy: A Consultative Paper,"* December 2000.

Lallana, Pascual and Andam; Cf. *SMEs and E-commerce: The Case of Indonesia*.

### **UNIT 3      *GOVERNMENT AND E-COMMERCE (CASE OF DEVELOPING COUNTRIES)***

#### **CONTENTS**

- 1.0 Introduction
- 2.0 Objectives
- 3.0 Main Content
  - 3.1 What is a Favorable Policy Environment for E-Commerce?
  - 3.2 How can Government use E-Commerce?
  - 3.3 Are Existing Legal Systems Sufficient to Protect those Engaged in E-Commerce?
  - 3.4 What other Relevant Policy Issues Should be Addressed?
  - 3.5 How can Government Intervene in the Promotion and Development of E-Commerce among SMEs?
- 4.0 Conclusion
- 5.0 Summary
- 6.0 Tutor-Marked Assignment
- 7.0 References/Further Readings

#### **1.0 INTRODUCTION**

##### ***What is the 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 favorable 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.

#### **2.0 OBJECTIVES**

At the end of this unit the student is expected to:

- know the roles of government in e-commerce initiatives
- identify the kind of government policies to favour e-commerce
- know the ways governments can use e-commerce
- know if the legal systems in place is sufficient for e-commerce operations
- identify the ways governments can intervene to assist e-



commerce initiatives.

### 3.0 MAIN CONTENT

#### 3.1 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 unauthorized access to computer systems); and
- 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).

#### 3.2 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 computerization 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 reflect.

### **3.3 Are Existing Legal Systems Sufficient to Protect those Engaged in E-Commerce?**

Unfortunately, the existing legal systems in most developing countries are not sufficient to protect those engaged in e-commerce. For instance, with respect to contracts, existing laws were conceived at a time when the word “writing,” “document” and “signature” referred to things in paper form. On the other hand, in today’s electronic business transactions paper is not used for record-keeping or entering into contracts.

Another important and common legal issue faced by many developing countries is uncertainty regarding whether the courts will accept electronic contracts or documents and/or electronic signatures as evidence. One view is that the issue of admissibility of electronically generated evidence will not be resolved unless a law specifically referring to it is passed. This gap in existing legal systems has caused the emergence of at least two divergent views: one bordering on the conservative interpretation of the word “document” as to exclude non-paper-based ones; and the other involving a liberal construction, which allows electronic counterparts of documents.

In the ASEAN region, only three countries-Singapore (Singapore Electronic Transactions Act), Malaysia (Cyberlaws), and the Philippines (Philippine E-commerce Act)-have a legal framework for e-commerce. These frameworks provide for the legal recognition of electronic documents and signatures and penalize common crimes and offenses committed in cyberspace.

### **3.4 What other Relevant Policy Issues should be Addressed?**

Other policy issues concern basic prerequisites of infrastructure for successful e-commerce, as follows:

### 3.4.1 Telecoms Pricing and Performance

One of the aims of telecommunications policy and legislation should be to ensure that the public has access to basic telecommunications services at a reasonable cost. The goal should ultimately be *universal access* – widespread access to reliable information and communication services at a reasonable cost and its availability at a reasonable distance.

To enhance the quality of telecommunications services, policies should encourage:

- **open access**, which refers to the absence of non-competitive practices by network providers;
- **open architecture**, which pertains to the design of a system that facilitates interconnection among different systems and services currently and as they develop over time; and
- **flexible access**, which pertains to interconnected and interoperable networks of telecommunications, broadcasting, and electronic publishing, where the format will be digital and the bandwidth will be adjusted according to the demands of the user and the character of communications.

### 3.4.2 Quality and Speed of Distribution Logistics (i.e., Roads and Bridges)

Roads and bridges, especially in developing countries, still form part of the e-commerce infrastructure. Very few goods are delivered over the information infrastructure or the Internet (the exceptions are music and software). Most of the goods purchased over the Internet are still delivered the conventional way (i.e., physical delivery). Hence, poor roads and bridges, inefficient transport systems, coupled with the high cost of international parcel services and bureaucratic customs clearance processes, are major obstacles in the uptake of e-commerce in developing countries.<sup>63</sup> Government should therefore create a policy environment that will:

- encourage investments in the national physical and transport infrastructure; and
- provide for electronic customs clearance processing to streamline the bureaucracy and allow for more transparent, predictable and efficient customs operations.

Both of these will contribute to the reduction of distribution and logistics costs.

## 3.5 How can Government intervene in the Promotion and Development of E-Commerce among SMEs?

The following are the more relevant areas for government intervention with respect to SME uptake of e-commerce:

### **3.5.1 E-SME Development**

The market ultimately drives e-commerce development, but it is the private sector that fuels it. Government can provide incentives to encourage widespread e-commerce use by SMEs. An “e-SME development program” in which various sectors can provide technical assistance to SMEs to promote e-commerce uptake, can also be developed. Banks, financial lending and training institutions, and corporations should be encouraged to develop “SME desks” that will address the specific needs of SMEs. In particular, steps should be taken to:

- provide incentives to individuals to become entrepreneurs by lowering borrowing rates;
- provide incentives to SMEs that intend to use e-commerce in their business operations;
- broaden credit extension facilities to SMEs in order for them to use ICT and e-commerce; and
- offer discounts on business solution software packages and software licenses.

Moreover, big businesses and corporations should be encouraged to transfer technology to SMEs by offering them free training in ICT and e-commerce.

### **3.5.2 Awareness Campaign**

Evidence suggests that SMEs have insufficient knowledge of information technology and e-commerce. Many SMEs have identified their lack of knowledge of technology as one of the main barriers to using e-commerce. Government and private sector partnerships can engage in a campaign to disseminate information to SMEs about e-commerce policies, best practices, success stories, and opportunities and obstacles relating to the use of ICTs and e-commerce. These awareness campaigns could include free training courses and workshops on e-commerce, security and privacy, awards programs, and information centers to assist SMEs. Ultimately, this information campaign should come in the form of an overall e-commerce development strategy for the economy, focusing on its various innovative applications for SMEs.

### **3.5.3 E-Government**

Government should be the lead-user of e-commerce if various business and private-sector related activities are to be prompted to move online. In effect, government becomes a positive influence. E-government can take the form of various online transactions such as company registration, taxation, applications for a variety of employee and business-related requirements, and the like.

#### **3.5.4 Network Infrastructure and Localization of Content**

A developed national information infrastructure is a necessary, though not a sufficient, condition for e-commerce uptake of SMEs. Without reliable and inexpensive telecommunications and other information services, SMEs will not be able to go online. An important strategy in this regard is the construction of “telecenters” or electronic community centers that would serve as a community-shared access and connectivity platform especially in the rural areas (e.g., an electronic agri-information center which provides market information to farmers in rural areas). These telecenters can also be a venue for capacity building, skills enhancement, training, communications and content development. Government can also adopt agglomerative approaches to Internet use to reduce costs (e.g., export aggregators, such as B2B or B2C portals/exchanges for SMEs, which will facilitate trading with fellow SMEs and with other companies in the international market).

#### **3.5.5 Strengthening Consumer Protection**

Among the more common trust-related issues that SMEs take note of in considering whether to engage in e-commerce are: where and how payment takes place (whether real or virtual); when settlement takes place (before, during or after the transaction); who settles; whether the transaction is B2B or B2C; and whether settlement can be traced. Generally, however, among e-commerce users in developing countries, including SMEs, there is very low willingness to provide sensitive financial information over the Internet. On the other hand, consumers have reservations about transacting with SMEs through the Internet due to the lack of a clear policy on returns and use of data. To address this concern, government can encourage companies/SMEs to make their privacy policy explicit in their Web sites.

A more comprehensive measure that government can undertake to ensure security in e-commerce transactions is the establishment of a Certification Authority, which verifies seller and buyer identities, examines transactions and security procedures, and issues digital certificates to those who are able to meet the set security standards. A good example of this government effort is Singapore’s Certification Authority, Netrust. This suggestion does not reduce the importance of

private-driven security solutions such as Web sites like Hypermart, which host and build storefronts for SMEs while providing them a common system for secure payments.

### **Case 1: Data Protection and Transaction Security**

Transaction security pertains to three important components and related issues, namely:

- Transaction Privacy, which means that transactions must be held private and intact, with unauthorized users unable to understand the message content;
- Transaction Confidentiality, implying that traces of transactions must be dislodged from the public network and that absolutely no intermediary is permitted to hold copies of the transaction unless authorized to do so; and
- Transaction Integrity, which pertains to the importance of protecting transactions from unlawful interference-i.e., transactions must be kept unaltered and unmodified. In an open network like the Internet, it seems difficult to ensure these. There are, however, technological solutions that seek to address these security concerns. These solutions usually come in the form of authorization schemes, i.e., programs that make sure that only authorized users can gain access to information resources such as user accounts, files, and databases. Typical examples of authorization schemes are: password protection, encrypted smart cards, biometrics (e.g., fingerprinting, iris-scanning), and firewalls.<sup>67</sup> A firewall is a system of cryptographic methods supported by perimeter guards to ensure the safe arrival and storage of information and its protection from internal and external threats. The most common data and transaction and data security scheme is encryption, which involves a set of secret codes that defends sensitive information crossing over online public channels. It makes information indecipherable except to those with a decryption/decoding key.

Government can also provide guidelines for SMEs in the development of a system of collaborative ratings, which these entrepreneurs can display on their Web sites not only to inform but also to assure their consumers of security. For instance, in electronic exchanges, customers should be able to rate suppliers in terms of quality of product or service and speed of delivery, among others. To minimize fraud, certain safeguards should be built into the rating system like imposing the requirement of presenting evidence of purchase before one's rating can count, with ratings of regular customers having more weight. Trends in ratings and comments should be made readily available to all users. SMEs should also be encouraged through appropriate government

incentive schemes to participate in internationally accredited Web-based online rating schemes.

Government can also design and establish a legal and judiciary framework that provides for minimum standards of and requirements for transparency, impartiality and timeliness. While in many developing countries this may be a very ambitious goal, in the medium term SMEs may use self-regulated codes of conduct covering, for example, return policy, data protection, and acceptable forms of content, that are applicable within associations, cooperatives or their respective groups of peers and e-entrepreneurs. It is important to have not only a rating system but also an enforcement regime that people trust.

### **3.5.6 Human Resources Development**

The government can initiate pilot projects and programs for capability-building, training and e-commerce support services, such as Web design. In Kenya, for instance, the youth from Nairobi's slums are being trained in Web design skills.

In general, government initiatives should be in line with current efforts in the foregoing areas of concern. Coordination with development cooperation agencies is important to avoid any duplication of initiatives and efforts.

### **3.5.7 Government Regulations**

In the United States, some electronic commerce activities are regulated by the Federal Trade Commission (FTC). These activities include the use of commercial e-mails, online advertising and consumer privacy. The CAN-SPAM Act of 2003 establishes national standards for direct marketing over e-mail. The Federal Trade Commission Act regulates all forms of advertising, including online advertising, and states that advertising must be truthful and non-deceptive. Using its authority under Section 5 of the FTC Act, which prohibits unfair or deceptive practices, the FTC has brought a number of cases to enforce the promises in corporate privacy statements, including promises about the security of consumers' personal information. As result, any corporate privacy policy related to e-commerce activity may be subject to enforcement by the FTC.

#### 4.0 CONCLUSION

*The government indeed has a very significant role to play in the seeing information and communications technology driven e-commerce become beneficial to developing countries economies. The major role of the government remains the provision of policy trusts, infrastructures and the general enabling environment foe e-commerce.*

#### 5.0 SUMMARY

i. 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.

ii. 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.

iii. Roads and bridges, especially in developing countries, still form part of the e-commerce infrastructure.

iv. Unfortunately, the existing legal systems in most developing countries are not sufficient to protect those engaged in e-commerce.

v. The market ultimately drives e-commerce development, but it is the private sector that fuels it. Government can provide incentives to encourage widespread e-commerce use by SMEs.

vi. A more comprehensive measure that government can undertake to ensure security in e-commerce transactions is the establishment of a Certification Authority, which verifies seller and buyer identities, examines transactions and security procedures, and issues digital certificates to those who are able to meet the set security standards.

vii. In the United States, some electronic commerce activities are regulated by the Federal Trade Commission (FTC).



## 6.0 TUTOR-MARKED ASSIGNMENT

1. Mention five public policy issues from the government that can favor e-commerce.
2. Discuss Awareness Campaign as a strategy to enhance SME.

## 7.0 REFERENCES/FURTHER READINGS

Anita Rosen (2000). *The E-commerce Question and Answer Book* (USA: American Management Association).

MK, Euro Info Correspondence Centre (Belgrade, Serbia), *"E-commerce-Factor of Economic Growth."*

Thomas L. Mesenbourg, *Measuring Electronic Business: Definitions, Underlying Concepts, and Measurement Plans.*

Definition adapted and expanded from Emmanuel Lallana, Rudy Quimbo, Zorayda Ruth Andam, ePrimer: *An Introduction to eCommerce* (Philippines: DAI-AGILE, 2000).

Lallana, Quimbo, Andam, 4. Cf. Ravi Kalakota and Andrew B. Whinston, (1997). *Electronic Commerce: A Manager's Guide* (USA: Addison Wesley Longman, Inc.

"E-commerce/Internet: B2B: 2B or Not 2B?" (Goldman Sachs Investment Research, November 1999), v. 1.1.

TA Project, "E-commerce"

Traderinasia.com; available from

<http://www.traderinasia.com/classifieds.html>;  
Internet; accessed 26 September 2002.

whatis.com, searchWebServices.com; available from <http://whatis.com/>

Michael Chait, *"Is the Dot-Com Bust Coming to an End?"* (July 8, 2002).

Reshma Kapadia, *"What Caused the Dot-Com Bust?"*

Reid Goldsborough, *"Viewpoint-Personal Computing: Forget the Dot-Com Bust, There's Still Money to Be Made"*

whatis.com, searchEBusiness.com.



Lynda M. Applegate, (2002). *Excerpts form the E-business Handbook*, The St. Lucie Press.

Suganthi, Balachandher and Balachandran, “*Internet Banking Patronage: An Empirical Investigation of Malaysia;*”

Andrea Goldstein and David O’Connor, *E-commerce for Development: Prospects and Policy Issues*, (OECD Development Centre, September 2000).

Noah Elkin, “*Developing Countries Meeting e-business Challenge,*” February 5, 2003.

Emmanuel Lallana, Patricia J. Pascual, and Zorayda Ruth Andam, *SMEs and E-commerce: The Philippine Case*; Cf. *SMEs and E-commerce: The Case of Indonesia*, prepared for The Asia Foundation by Castle Asia.

Nancy Hafkin and Nancy Taggart, (June 2001) “*Gender, Information Technology, and Developing Countries: An Analytical Study.*”

Department of Trade and Communications. “*An Infocomms Policy for the Information Economy: A Consultative Paper,*” December 2000.

Lallana, Pascual and Andam; Cf. *SMEs and E-commerce: The Case of Indonesia*.

## UNIT 4 COMPANY CASE STUDIES

### CONTENTS

- 1.0 Introduction
- 2.0 Objectives
- 3.0 Main Content
- 3.1 Case Studies
  - Case i: Auto-by-Tel and Others: Buying a Car on the Internet*
  - Case ii: Ups versus Fedex: Competing on the World Wide Web*
  - Case iii: MCI Communications: Creating the Virtual Office*
  - Case iv: Pacific Northwest National Laboratory and Others: Abusing Internet Access in the Workplace*
  - Case v: Women and Global Web-Based Marketing: The Case of the Guyanan Weavers' Cooperative*
- 4.0 Conclusion
- 5.0 Summary
- 6.0 Tutor-Marked Assignment
- 7.0 References/Further Readings

### 1.0 INTRODUCTION

A life case study goes a long way to validate the potency of business concepts, principles and emerging technologies. Several organizations have adopted electronic business and/or commerce concepts and their experiences are discussed in this unit.

### 2.0 OBJECTIVES

At the end of this unit the student is expected to:

- know how to buy items especially car through the Internet
- understand how competitors use the web and the Internet as comparative advantage in business transaction
- learn first hand how to adopt the virtual office in an organization
- know to what extent the Internet can be abused.

### 3.0 MAIN CONTENT

#### Case 1: AUTO-BY-TEL AND OTHERS: BUYING A CAR ON THE INTERNET

If buying a new car gives you about as much pleasure as scheduling a root canal, take heart. Computer technology, modern merchandising, and old-fashioned entrepreneurial spirit are about to put traditional car dealers on the endangered species list.

Let's say you're thinking of buying a car. You can visit a half-dozen dealers, kick tires, and dicker with the salespeople. Or you can dial up the World Wide Web and make your purchase in peace. Say you want a Ford Explorer, the third most popular vehicle in the United States. You need to make three online connections, all free.

Start by calling DealerNet (<http://www.dealernet.com>), created by Reynolds & Reynolds, which provides computer services to dealers. You can see a picture of the Explorer and find out how it compares with competitors like the Jeep Grand Cherokee in such key areas as trunk space, fuel economy, and price.

Suppose you settle on a four-door, four-wheel-drive XLT model. Key over to the prices posted by Edmund Publications (<http://www.edmund.com>), a longtime compiler of such information. There you discover that while the base XLT has a sticker price of \$25,710, the dealer pays only \$23,225. You also learn a little-known fact: The XLT carries a 3 percent holdback – essentially a rebate for each Explorer that Ford pays to the dealer at the end of the year. This may help you in evaluating the price your dealer quotes.

When you're ready to order, type in <http://www.autobytel.com/>. There are several buying services on the Web, but Auto-By-Tel is free. A few days after you've placed your order, you'll get a call from a nearby dealer. He will charge you a fixed amount over the invoice and deliver the car. Now, wasn't that easy!

The experience of George Chin, 43, a technical services manager in upstate New York, is typical. Using the internet, he compared the specifications of various models and learned their retail and wholesale prices. Then he placed an electronic order for a Ford Explorer XLT with Auto-By-Tel, a computerized broker service. A few days later, he got a call from a nearby dealer, Bill Colb Ford, who filled the order for a fixed amount over the wholesale price and delivered the vehicle. Says Chin: "The whole experience was painless. There was no price haggling. No psychological pressure. No surprises."

Auto-By-Tel is the creation of former California Ford and Chrysler dealer Peter Ellis. When his idea for selling cars on QVC television didn't work out two years ago, he decided to retail them in cyberspace. Ellis took sites on established online services like CompuServe, as well as on the World Wide Web, to solicit orders from customers. He relays an order to one of 1,200 dealers, each of which pays Ellis between \$200 and \$1,500 a month for referrals. The margins on each sale are low (about \$600), but so are the costs. By snagging their customer electronically, the dealers can cut their marketing expense from \$400 a car to \$30. In one month, over 12,000 potential car buyers logged on to

Auto-By-Tel. Electronic shopping has the potential to add enormous value to the buying process and reduce costs to a minimum. Manufacturers should be able to get accurate and timely data about consumer preferences that will enable them to schedule parts deliveries and production runs more sensibly. Even better, cars can be sold without building showrooms.

Eventually a customer may be able to conduct an electronic auction, asking, say, all the Ford dealers in the Northeast to give him the price and availability of a particular Explorer--delivered to his driveway, of course--and seeing how much they will pay for his trade-in. Then he could dial up the factory where his car will be built, schedule it for the production queue, and get a date for its delivery.

Dealers won't become extinct, of course. But for a change, neither they nor the manufacturer will be in control of selling a car. With all these new ways to buy, it will be the customer, finally, who's in the driver's seat.

Source: Adapted from Alex Taylor III, "How to Buy a Car on the Internet and Other New Ways to Make the Second Biggest Purchase of a Lifetime," *Fortune*, March 4, 1996, pp. 164-68.

## **Case II: UPS VERSUS FEDEX: COMPETING ON THE WORLD WIDE WEB**

The World Wide Web is the latest battlefield for warring delivery companies FedEx and UPS, and their arsenal is a mix of intranet and electronic commerce applications. At stake: kingship of top-to-bottom package scheduling, shipping, and tracking via the Internet. The companies have vowed that everything a customer does today will soon be done on-line and that their financial futures depend on it.

"We're fanatics about the Web. It's hyper important to us," said Robert Hamilton, manager of electronic commerce marketing at FedEx Corp. In Memphis, Tennessee. The \$9.4 billion company has a long-range goal of generating 100 percent of its business on-line.

No less adamant is United Parcel Service, Inc. "Our energy is the Internet. We know that's where we need to be," said Tom Hoffman, manager of public network access development in the customer automation group at UPS in Mahwah, New Jersey.

Many of the on-line applications that the firms have in the works aren't simple Web programs for interacting with customers. Nor are they strict, behind-the-firewall intranet applications. They are complicated hybrids

public Internet/intranet systems that few users have tried. Let's look at some stats from both UPS and FedEx Systems:

### **UPS Internet Website**

**Web server software:** Netscape Commerce Server

**Hardware:** Sun SPARC servers

**Key services:** Package tracking, rate calculations, transit maps

**Traffic volume:** 200,000 to 300,000 hits per week

### ***UPS Intranet***

**Web browser:** Netscape Navigator

**Web server software:** Netscape Communications Server

**Hardware:** Sun SPARC server 1000s

### **Kinds of applications:**

- Marketing and logistics groups analyze data collected from external Web site.
- Departmental newsgroups.
- Software distribution.

### **FedEx Internet Website**

**Web server software:** Netscape Commerce Server

**Hardware:** Sun SPARC 1000s

**Key services:** Package tracking, delivery options, software downloads

**Traffic volume:** 280,000 to 420,000 hits per day

### **FedEx Intranet**

**Web browser:** Netscape Navigator

**Web server software:** Netscape Communications Server

**Hardware:** Sun SPARC servers and HP 9000s

**Kinds of applications:**

- Mapping system to match customers with best or closest FedEx office.
- Imaging-based inventory system.
- Personnel manuals.

UPS beat FedEx to market with a Web site that can handle package scheduling and pickup from start to finish. That means anyone in a major metropolitan area who has a box to ship can surf to the UPS Web site, check delivery routes, calculate rates, and schedule a pickup. Payment is made off-line. Eventually, payment will be done on the Web by credit card or, for large, regular customers, via a tab tracked with on-line purchase orders.

Such a system requires data collected at the external Web site to be shunted in-house, melded with UPS's IBM mainframe and AS/400 scheduling system, and spit out in a Web-readable form for the waiting customer. UPS's information systems group has built connectors to translate Hypertext Markup Language and other Web languages to formats that are compatible with IBM databases. The tough part, Hoffman said, is designing a system that flows smoothly between the public internet and the secured intranet realm.

Meanwhile, UPS and FedEx run neck-and-neck in Web-based package tracking functions that let users type in a package number and find out where it is. FedEx users track 13,000 packages daily that way. UPS customers track 10,000 packages per day.

Source: Adapted from Kim Nash, "Overnight Services Duke It Out On-Line," *Computerworld*, April 22, 1996, pp. 1, 64. Copyright 1996 by Computerworld Inc., Framingham, MA 01701 Reprinted from *Computerworld*.

**Case III: MCI COMMUNICATIONS: CREATING THE VIRTUAL OFFICE**

Words such as *hearth* and *cafe* might bring to mind homey images of a country inn, but at the MCI Rally Center in Boston these are parts of a futuristic virtual office. The Boston Rally Center is the first of 200 such offices that MCI Communications Corp. Plans to roll out in the next year or so. The rally center concept is the second phase of MCI's approximately \$75 million investment in a mobile client/server project. This is one of the largest sales force automation plans ever undertaken. Eventually, more than 5,600 field service representatives will work out of rally centers throughout the country. The Boston center is notable for

its mobile workforce deployment, its state-of-the-art technology, and advanced office design.

Instead of having to report to an office and a designated cubicle every day, the center's approximately 120 sales representatives can work anywhere, anytime, by using loaded IBM 755CD ThinkPad laptops that connect via client/server software.

Sales representatives can share tips and retrieve data from resources that include a business library that lets users download pamphlets and product features.

The center of the office is the "hearth," a large, wide-open room with muted colors. Modular furniture including small tables, comfortable chairs, and laptop stands is scattered around and can be moved to suit an individual's needs. Plugs allow laptops to be connected via floors or walls. Large, rolling whiteboards are provided as planning tools or to close off areas during meetings.

In one corner of the room is the "cafe," a coffee bar with laptop connections where field representatives can meet to compare notes. A large video monitor is in another corner.

"Home base" is a locker area where sales representatives keep small rolling files. Before moving into the virtual office, representatives were required to throw out anything they don't really need and fit everything they consider essential into the folding storage bins.

Representatives can set up shop for the day in the "heads down" area that was devised for quiet work.

"The managers roam around too; we share three glassed-in offices among 18 managers," said Susan Beckmann, the branch director of the Boston Rally Center. "And we're out on the floor more often than not, not holed up in our offices."

"What MCI has done right is to treat this center concept as a technological development issue as much as business development issue," said Gill Gordon, a telecommuting analyst at Gill Gordon Associates in Monmouth Junction, New Jersey. "And not so much for what this will do for space-saving costs, although that will happen, too." "The other thing that will likely make this a successful rollout is that this is very aggressive. This isn't a pilot or a toe-in-the-water project; the Boston center is actually a prototype," Gordon said. "It's the first one out of the box."

Beckmann said MCI hopes the center will raise sales and revenue by as much as 30 percent in the first year of operation.

Source: Adapted from Mindy Blodgett, "Virtual Office Prototype Puts Field Service Reps to Work at 'Hearth' of MCI," *Computerworld*, February 26, 1996, pp. 73, 76. Copyright 1996 by Computerworld, Inc., Framingham, MA 01701 Reprinted from *Computerworld*.

#### **Case IV: PACIFIC NORTHWEST NATIONAL LABORATORY AND OTHERS: ABUSING INTERNET ACCESS IN THE WORKPLACE**

Employers who give Internet access to their staffs are sending out a message: Look at porn, lose a paycheck.

Faced with international controversies over pornography and hate speech on the Internet, employers are setting policies to limit Internet usage to business purposes. They also are penalizing employees who send out abusive electronic mail, "flame" people on Usenet, or visit inappropriate sites on the World Wide Web. And they are cautioning employees to remember that out on the 'net, they represent their companies, not just themselves.

"Employees are under the misapprehension that the First Amendment applies in the workplace it doesn't," said Neal J. Friedman, a Washington attorney who specializes in online law. "Employees need to know they have no right of privacy and no right of free speech using company resources."

Employers are hitting the hardest when sex and pornography are involved. Consider these recent examples: Some 98 employees at Pacific Northwest National Laboratory in Richland, Washington, were disciplined last month when audits of system usage revealed that they used lab computers on their own time to access pornographic sites on the Web. Pacific Northwest National Laboratory became suspicious that employees were abusing the Internet when the staff set up sniffers to measure 'net traffic and found lots of hits going out to *Playboy* and *Penthouse* sites.

- Kmart Corp. In Troy, Michigan, fired web-master Rod Fournier in November when he created a hot link from a single period at the end of a sentence on the Kmart home page to his personal home page. That page, in turn, contained a link to a site that spoofed the controversy over Internet pornography.



- At Sandia National Labs in Albuquerque, New Mexico, 64 employees, contractors, and college interns were disciplined in August and September for reading pornography on company time and their own time. The heaviest offenders were suspended without pay for up to a month, while others received shorter unpaid suspensions and letters of reprimand.

For most companies, an Internet usage policy is straightforward. It generally informs employees that their Internet access is a company resource that should be used only for their jobs.

"3M's policy is simply put: that the Web must be used for business purposes. If people get on and abuse it, then you've got a problem with that individual and need to handle it," said Luke Crofoot, a marketing services supervisor at 3M in St. Paul, Minnesota. Crofoot said he opposes draconian measures to control Internet use. "What really gets under my skin is the people who want to censor the world and place on me the burden of creating the infrastructure of what should and should not be censored," he said. Trying to control employee use of the Internet is nonproductive, he added. It is better to educate people about how to use the Internet and accept that at first they will spend a lot of time online looking up nonbusiness-related content, Crofoot said.

That approach may work for companies that give employees a lot of independence, said Barry Weiss, a partner at Gordon & Glickson, a Chicago law firm that specializes in information technology legal issues. But for firms that want more control over their employees, the best solution is to develop detailed Internet usage policies, he added. Companies that have detailed Internet usage policies in place or are developing them include The Chase Manhattan Bank NA; Johnson Controls, Inc.; Pioneer Hi-Bred International Inc.; and Monsanto Co.

"The Internet is essentially a communications tool," Weiss said. "It's important that companies think about the different ways that information will be communicated. They want to define policies and procedures to avoid risk so that this new technology will be used in an effective way." Source: Adapted from Mitch Wagner, "Firms Spell Out Appropriate Use of Internet for Employees," *Computerworld*, February 5, 1996, pp. 56-58. Copyright © 1996 by Computerworld, Inc., Framingham, MA 01701 Reprinted from *Computerworld*.

### **Case V: Women and Global Web-Based Marketing: The Case of the Guyanan Weavers' Cooperative**

The Guyanan Weavers' Cooperative is an organization founded by 300 women from the Wapishana and Macushi tribes in Guyana, northern South America. The cooperative revived the ancient art of hammock weaving using 19th century accounts and illustrations of the hammocks made by European travelers and the cultivation of cotton on small family plots and hand-weaving. The organization then hired someone to create a Web site, which was instrumental in bringing their wares online. Not long after, in the mid-1990s, the group of weavers (the Rupununi Weavers Society) was able to sell hammocks to Queen Elizabeth, Prince Philip, the Smithsonian Institute, and the British Museum. Since 1998, they have sold about 20 hammocks through the Internet at \$1,000 per piece. This case also shows that SMEs have great potential to compete in markets for high-end, bespoke products despite the low sales volume.

In addition, many Web sites providing market and technical information, agronomic advice and risk management tools for SMEs (to coffee and tea farmers in developing countries, for example) have emerged.

## **4.0 CONCLUSION**

There is no better way to portray e-business or the use technology in driving business than through the 'Real World' case studies of prominent and frontline businesses.

## **5.0 SUMMARY**

NOTE: No Summary is Needed. This Unit is a Case Study

## **6.0 TUTOR-MARKED ASSIGNMENT**

Discuss briefly creation of the virtual office by MCI Communications.

## **7.0 REFERENCES/FURTHER READINGS**

James A. O'Brien, *Introduction to Information Systems*, Eighth Edition, ISBN: 0-256-20937-5.

Mitch Wagner, "Firms Spell Out Appropriate Use of Internet for Employees," *Computerworld*, February 5, 1996, pp. 56-58.