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**SCHOOL OF PURE AND APPLIED SCIENCES**  
**DEPARTMENT OF INFORMATION TECHNOLOGY**

**COURSE CODE: BIT 4204**

**COURSE TITLE: ELECTRONIC COMMERCE**

*Instructional manual for BBIT – Distance Learning*

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## **COURSE OUTLINE**

### **BIT 4204: E-COMMERCE**

#### **Purpose of the course**

To introduce the learner to the concepts and terminologies of e- commerce and to provide the learner with sufficient knowledge and skills for effective participation in e- business.

<b>ELECTRONIC-COMMERCE - TOPICS - DETAILS</b>
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#### **I. Introduction to electronic commerce(EC) basics**

- A. Definition of terms
- B. History of EC
- C. Classification of E-Business Transactions
- D. Revenue Models
- E. Benefits and Limitations of EC
- F. Factors affecting e- commerce in Kenya

#### **II. Enabling Technologies and infrastructure**

- A. The internet and the World wide web
- B. Client server computing
- C. Intranet and extranets
- D. Connecting technologies for networks such as broadband

#### **III. The E-Marketplaces structures and mechanisms**

- A. Introduction to Electronic markets
- B. Electronic markets components participants
- C. E-Market places; storefronts and electronic malls
- D. Information portal
- E. Transactions, intermediation, and processes in E-commerce

#### **IV. Internet Consumer Retailing**

- A. Introduction and definition of terms
- B. E-Tailing business models
- C. Travel and tourism services online
- D. Internet job market
- E. Real estate, insurance, and stock trading online

#### **V. Consumer behavior Market research and advertisement.**

- A. The consumer decision making process
- B. Personalization, loyalty, satisfaction and trust in EC
- C. Methods of conduction market research online

#### **VI. Internet marketing**

- A. The marketing and Advertising processes in B2B
- B. Web advertising
- C. Online advertising methods

**VII. E-Commerce security**

- A. Challenges of Stopping E-commerce crimes
- B. Confidentiality, integrity and availability
- C. Security tools; hardware and software
- D. Threats and Attacks; Technical and Non-technical
- E. Securing E-commerce communications

**VIII. Electronic payment systems**

- A. The payment revolution
- B. Payment cards
- C. Other forms of payment

**IX. Legal and ethical issues in e- business**

**Main course text**

Turban E. D., Electronic Commerce, 2008 Managerial Perspective (Pearson International Edition)

**Reference Books**

- i. Ward Hanson, (2007), *Principles of Internet Marketing*, South-Western College Publishers).
- ii. Capron H.L., Computers: Tools for information age (5th Edition).

**Assessment:** Examination - 70%: Coursework - 30%

## CHAPTER ONE

### INTRODUCTION TO E-COMMERCE



#### Learning Objectives

By the end of this chapter the learner shall be able to;

- i. Explain the evolution of E-Commerce and the technological advancements to current
- ii. Explain the different Classifications of E-Business Transactions
- iii. Explain the different revenue models
- iv. Explain the Benefits and Limitations of EC and the Factors affecting e-commerce in Kenya

#### 1.1 Definition of terms

**Electronic Commerce - Electronic commerce**, commonly known as e-commerce, **eCommerce** or **e-comm**, consists of the buying and selling of products or services over electronic systems such as the Internet and other computer networks.

**E-Business - Electronic business**, commonly referred to as "eBusiness" or "**e-business**", or an internet business, may be defined as the application of information and communication technologies (ICT) in support of all the activities of business. Commerce constitutes the exchange of products and services between businesses, groups and individuals and can be seen as one of the essential activities of any business. Electronic commerce focuses on the use of ICT to enable the external activities and relationships of the business with individuals, groups and other businesses.

**brick and mortar businesses** are companies that have a physical presence — a physical store — and offer face-to-face consumer experiences. This term is usually used to contrast with a transitory business or an internet-only presence, such as an online shop.

**pure play** is an organization that originated and does business purely through the Internet; they have no physical store (brick and mortar) where customers can shop. Examples of large pure play companies include Amazon.com.

**Click And Mortar** - A type of business model that includes both online and offline operations, which typically include a website and a physical store. A click-and-mortar company can offer customers the benefits of fast, online transactions or traditional, face to face service.

**Internet** - The **Internet** is a global system of interconnected computer networks that use the standard Internet Protocol Suite (TCP/IP) to serve billions of users worldwide. It is a *network of networks* that consists of millions of private, public, academic, business, and government networks, of local to global scope, that are linked by a broad array of electronic, wireless and optical networking technologies. The Internet carries a vast range of information resources and services, such as the inter-linked hypertext documents of the World Wide Web (WWW) and the infrastructure to support electronic mail.

**Intranet** - An **intranet** is a private computer network that uses Internet Protocol technology to securely share any part of an organization's information or network operating system within that organization. The term is used in contrast to *internet*, a network between organizations, and instead refers to a network within an organization. Sometimes the term refers only to the organization's internal website, but may be a more extensive part of the organization's information technology infrastructure.

**Extranet** - An **extranet** is a computer network that allows controlled access from the outside, for specific business or educational purposes. An extranet can be viewed as an extension of a company's intranet that is extended to users outside the company, usually partners, vendors, and suppliers. It has also been described as a "state of mind" in which the Internet is perceived as a way to do business with a selected set of other companies (business-to-business, B2B), in isolation from all other Internet users.

## 1.2 History of EC

EC applications were first developed in the early 1970s with innovations such as *Electronic funds Transfer* (EFT), whereby funds could be routed electronically from one



organization to another. However, the use of these applications was limited to corporations, financial institutions, and a few other daring businesses. Then came *electronic data interchange* (EDI), a technology used to electronically transfer routine documents, which expanded electronic transfers from financial transactions to other types of transaction processing. EDI enlarged the pool of participating companies from financial institutions to manufacturers, retailers, services, and many types of businesses. Such systems were called interorganisational system (IOS) applications and their strategic value to businesses has been widely recognized. More new EC applications followed, ranging from travel reservation systems to stock trading.

The Internet began life as an experiment by the US. government in 1969, and its initial users were a largely technical audience of government agencies and academic researchers and scientists. When the Internet became commercialized and users began flocking to participate in the World Wide Web in the early 1990s, the term *electronic commerce* was coined applications rapidly expanded. A large number of so-called dot-coms, or Internet start-ups, also appeared. One reason for this rapid expansion was the development of new networks, protocols, and EC software. The other reason was the increase in competition and other business pressures. Since 1995, Internet users have witnessed the development of many innovative applications, ranging from online direct sales to e-learning experiences. Almost every medium- and large-sized organization in the world now has a Web site, and most large U.S. corporations have comprehensive portals through which employees, employees and business partners, and the public can access corporate information. Many of these sites contain tens of thousand of pages and links. In 1999, the emphasis of EC shifted from B2B, and in 2001 from B2B to B2E, c-commerce, e-government, e-learning and m-commerce.

### **1.3 Classification of E-Business Transactions**

**Business-to-business (B2B)** describes commerce transactions between businesses, such as between a manufacturer and a wholesaler, or between a wholesaler and a retailer.

**Business-to-consumer (B2C)**, sometimes also called **Business-to-Customer** describes activities of businesses serving end consumers with products and/or services.

An example of a B2C transaction would be a person buying a pair of shoes from a retailer. The transactions that led to the shoes being available for purchase, that is the purchase of the leather, laces, rubber, etc.

### **Business-to-business to consumer (B2B2C)**

E-Commerce model in which a business provides some product or service to a client business that maintains its own customers.

### **Consumer-to-business (C2B)**

E-commerce model in which individuals use the internet to sell products or services to organizations or individuals who seek sellers to bid on products or services they need.

### **Consumer-to-consumer (C2)**

E-commerce model in which consumers sell directly to other consumers.

### **Mobile-commerce (M-Commerce)**

E-Commerce transactions and activities conducted in a wireless environment

## **1.4 Revenue Models**

A revenue model outlines how the organization or the EC project will generate revenue. The major revenue models are:

- Sales. Companies generate revenue from selling merchandise or services over their Web sites. A11 example is when Wal-Mart, Amazon.com, or Godiva sells a product online.
- Transaction fees. A company receives 21 commission based on the volume of transactions made. For example, when a homeowner sells a house, he typically pays a transaction fee to the broker. The higher the value of the sale, the higher the total transaction fee. Alternatively; transaction fees can be levied per transaction. With online stock trades, for example, there is usually at fixed fee per trade, regardless of the volume.
- Subscription fees. Customers pay a fixed amount, usually monthly, to get some type of service. An example would be the access fee for AOL. Thus, ACES primary revenue model is subscription (fixed monthly payments).
- Advertising fees. Companies charge others for allowing them to place a banner on their sites. This is how Google has made its fortune.
- Affiliate fees. Companies receive commissions for referring customers to others Web sites.

- Other revenue sources. Some companies allow people to play games for a fee or to watch a sports competition in real time for a fee. Another revenue source is licensing fees (eg., [datadirect-technologies.com](http://datadirect-technologies.com)). Licensing fees can be assessed as an annual fee or a per usage fee. Microsoft takes fees from each workstation that uses Windows NT; for example.

## **1.5 Benefits and Limitations of E-commerce**

### **The Benefits of EC**

Few innovations in human history encompass as many potential benefits as EC does. The global nature of the technology, low cost, opportunity to reach hundreds of millions of people (projected within 10 years), interactive nature, variety of possibilities, and resourcefulness and rapid growth of the supporting infrastructures (especially the Web) result in many potential benefits to organizations, individuals, and society. These benefits are just starting to materialize, but they will increase significantly as EC expands.

### **Benefits to Organizations**

#### **The benefits to organizations are as follows:**

- □Electronic commerce expands the marketplace to national and international markets. With minimal capital outlay, a company can easily and quickly locate more customers, the best suppliers, and the most suitable business partners worldwide. For example, in 1997, Boeing Corporation reported a savings of 20 percent after a request for a proposal to manufacture a subsystem was posted on the Internet. A small vendor in Hungary answered the request and won the electronic bid. Not only was the subsystem cheaper, but it was delivered quickly.
- Electronic commerce decreases the cost of creating, processing, distributing, storing, and retrieving paper-based information. For example, by introducing an electronic procurement system, companies can cut the purchasing administrative costs by as much as 85 percent. Another example is benefit payments. For the U.S. federal government, the cost of issuing a paper check is 430. The cost of electronic payment is 20.
- Ability for creating highly specialized businesses. For example, dog toys which can be purchased only in pet shops or department and discount stores in the physical world, are sold now in a specialized [www.dogtoys.com](http://www.dogtoys.com) (also see [www.cattoys.com](http://www.cattoys.com)).
- □Electronic commerce allows reduced inventories and overhead by facilitating “pull”-type supply chain management. In a pull-type system the process starts from customer orders and uses just-in-time manufacturing.
- □The pull-type processing enables expensive customization of products and services, which provides competitive advantage to its implementers. A classic example is Dell Computer Corp., whose case will be described later.
- □Electronic commerce reduces the time between the outlay of capital and the receipt of products and services. Electronic commerce initiates business processes reengineering

projects. By changing processes, productivity of salespeople, knowledge workers, and administrators can increase by 100 percent or more.

- ☐ Electronic commerce lowers telecommunications cost-the Internet is much cheaper than VANs.
- ☐ Other benefits include improved image, improved customer service, newfound business partners, simplified processes, compressed cycle and delivery time, increased productivity, eliminating paper, expediting access to information, reduced transportation costs, and increased flexibility.

### **Benefits to Consumers**

The benefits of EC to consumers are as follows:

- Electronic commerce enables customers to shop or do other transactions 24 hours a day, all year round, from almost any location.
- ☐ Electronic commerce provides customers with more choices; they can select Electronic commerce frequently provides customers with less expensive products and services by allowing them to shop in many places and conduct quick comparisons.
- ☐ In some cases, especially with digitized products, EC allows quick delivery.
- ☐ Customers can receive relevant and detailed information in seconds, rather than days or weeks.
- ☐ Electronic commerce makes it possible to participate in virtual auctions.
- ☐ Electronic commerce allows customers to interact with other customers in electronic communities and exchange ideas as well as compare experiences.
- ☐ Electronic commerce facilitates competition, which results in substantial discounts.

### **Benefits to Society**

The benefits of EC to society are as follows:

- Electronic commerce enables more individuals to work at home and to do less traveling for shopping, resulting in less traffic on the roads and lower air pollution.
- ☐ Electronic commerce allows some merchandise to be sold at lower prices, so less affluent people can buy more and increase their standard of living.
- ☐ Electronic commerce enables people in Third World countries and rural areas to enjoy products and services that otherwise are not available to them.
- ☐ This includes opportunities to learn professions and earn college degrees.
- ☐ Electronic commerce facilitates delivery of public services, such as health care, education, and distribution of government social services at a reduced cost and/or improved quality. Health-care services, for example, can reach patients in rural areas.

## **1.6 The Limitations of EC and Factors Affecting Adoption in Kenya**

The limitations of EC can be grouped into technical and nontechnical categories. **Technical Limitations of EC**

The technical limitations of EC are as follows:

- ☐ There is a lack of system security, reliability, standards, and some communication protocols.
- ☐ There is insufficient telecommunication bandwidth.
- ☐ The software development tools are still evolving and changing rapidly.
- ☐ It is difficult to integrate the Internet and EC software with some existing applications and databases.
- ☐ Vendors may need special Web servers and other infrastructures, in addition to the network servers.
- ☐ Some EC software might not fit with some hardware, or may be incompatible with some operating systems or other components.

As time passes, these limitations will lessen or be overcome; appropriate planning can minimize their impact.

### **NonTechnical Limitations**

Of the many nontechnical limitations that slow the spread of EC, the following are the major ones.

- ☐ Cost and justification The cost of developing EC in-house can be very high, and mistakes due to lack of experience may result in delays. There are many opportunities for outsourcing, but where and how to do it is not a simple issue. Furthermore, to justify the system one must deal with some intangible benefits (such as improved customer service and the value of advertisement), which are difficult to quantify.
- ☐ Security and privacy These issues are especially important in the B2C area, especially security issues which are perceived to be more serious than they really are when appropriate encryption is used. Privacy measures are constantly improved. Yet, the customers perceive these issues as very important, and, the EC industry has a very long and difficult task of convincing customers that online transactions and privacy are, in fact, very secure.
- ☐ Lack of trust and user resistance Customers do not trust an unknown faceless seller (sometimes they do not trust even known ones), paperless transactions, and electronic money. So switching from physical to virtual stores may be difficult.
- ☐ Other limiting factors. Lack of touch and feel online. Some customers like to touch items such as clothes and like to know exactly what they are buying.
- ☐ Many legal issues are as yet unresolved, and government regulations and standards are not refined enough for many circumstances.
- ☐ Electronic commerce, as a discipline, is still evolving and changing rapidly. Many people are looking for a stable area before they enter into it.
- ☐ There are not enough support services. For example, copyright clearance centers for EC transactions do not exist, and high-quality evaluators, or qualified EC tax experts, are rare.
- ☐ In most applications there are not yet enough sellers and buyers for profitable EC operations.
- ☐ Electronic commerce could result in a breakdown of human relationships.

- Accessibility to the Internet is still expensive and/or inconvenient for many potential customers. (With Web TV, cell telephone access, kiosks, and constant media attention, the critical mass will eventually develop.) Despite these limitations, rapid progress in EC is taking place. For example, the number of people in the United States who buy and sell stocks electronically increased from 300,000 at the beginning of 1996 to about 10 million in fall 1999. As experience accumulates and technology improves, the ratio of EC benefits to costs will increase, resulting in a greater rate of EC adoption. The potential benefits may not be convincing enough reasons to start EC activities



### **Chapter Review Questions**

1. Visit [uzanunua.com](http://uzanunua.com) and identify the services the company provides to its customers. What type of EC is this? What business model does uzanunua use?
2. Compare brick-and-mortar and click-and-mortar organizations
3. Why is E-Learning considered EC?
4. Which of the EC limitations do you think will be more easily overcome in Kenya- the technological or the non technological limitations? Why?

Turban E. D., Electronic Commerce, 2008 Managerial Perspective (Pearson International Edition) page 4-29

## CHAPTER TWO

### ENABLING TECHNOLOGIES AND INFRASTRUCTURE



#### Learning Objectives

By the end of this chapter the learner shall be able to;

- i. Explain the technologies that facilitate E-commerce
- ii. Explain the concept of the Client server technologies
- iii. Explain the concept of the Intranets and the extranets
- iv. Explain the different connecting technologies for networks such as broadband.

### 2.1 The Internet and the World Wide Web

The **Internet** is a global system of interconnected computer networks that use the standard Internet Protocol Suite (TCP/IP) to serve billions of users worldwide. It is a *network of networks* that consists of millions of private, public, academic, business, and government networks, of local to global scope, that are linked by a broad array of electronic, wireless and optical networking technologies. The Internet carries a vast range of information resources and services, such as the inter-linked hypertext documents of the World Wide Web (WWW) and the infrastructure to support electronic mail.

The origins of the Internet reach back to research of the 1960s, commissioned by the United States government in collaboration with private commercial interests to build robust, fault-tolerant, and distributed computer networks.

Services Provided by the Internet

#### Electronic Mail

E-mail, also known as electronic mail, is one of the most popular Internet services. E-mail allows you to send messages to one person, or to send a message simultaneously to a group of people. One of the greatest advantages of e-mail over other forms of communication is the convenience to the recipient. Messages wait in your mailbox until you open it. Another advantage of an Internet e-mail account is that you can check your e-mail as you travel; assuming you can access



the Internet in the city you are visiting through friends, family, professional organizations, or a public or college library.

**(i) Features of E-mail:**

- One-to-one or one-to-many communications
- Instant communications
- Physical presence of recipient is not required
- Most inexpensive mail service, 24-hours a day and seven days a week
- Encourages informal communication

**(ii) Components of an E-mail Address**

As in the case of normal mail system, e-mail is also based upon the concept of a recipient address. The email address provides all of the information required to get a message to the recipient from anywhere in the world. Consider the e-mail ID

john@hotmail.com

In the example above, "john" is the local part, which is the name of a mailbox on the destination computer, where finally the mail will be delivered. Hotmail is the mailserver where the mailbox "john" exists, .com is the type of organisation on net, which is hosting the mail server.

There are six main categories;

**com** Commercial institutions or organization

**edu** Educational institutions

**gov** Government site

**mil** Military site

**net** Gateways and administrative hosts

**org** Private organizations

**WWW**

**WWW** are initials that stand for **World Wide Web**. A "web" is a network of fibers or cables connecting different points. (Spiders make webs to catch flies.) The Web is one of the services

available on the Internet. It lets you access millions of pages through a system of hyperlinks. Because it is "world-wide", it was originally called the World Wide Web or WWW. This is a special part of the internet that allows people to view information stored on participating computers. It is an easy-to-use, graphical source of information which has opened the internet to millions of people interested in finding out information.

### **FTP (File Transfer Protocol)**

This facility is a method of gaining limited access to another machine in the Internet, and obtaining files from it. You **need full Internet connectivity**, to do ftp interactively. FTP has many advantages, for example, it allows you to get new free software, or updated versions of old programs, as well as useful data for your research. The most common way of using FTP is via **anonymous FTP**. When you start an ftp connection, you will be asked for a user name and a password.

### **Telnet: logging in to Remote Network Computers**

Telnet is the Internet facility that allows you to execute commands on a remote host (another computer, most likely one to which you do not have physical access) as if you were logged in locally. You need to know the name of the machine to which you want to connect, and to have a valid user name in it. There is no such thing as "anonymous" telnet.

The commands for telnet are:

- telnet hostname: it will open a connection to the host you name. For example, "telnet math.sunysb.edu" will connect you to the machine named math.sunysb.edu
- telnet "address": it opens a connection to the host at "address".

### **Usenet Newsgroups**

Usenet newsgroups, also called bulletin boards, are a similar e-mail conferencing system, but are less intrusive to the subscriber than listserves since messages are posted to Usenet sites around the world instead of appearing in each subscriber's mailbox. Usenet refers to the huge collection of messages which are posted to tens of thousands of newsgroups worldwide. Millions of people

around the world regularly read newsgroup messages, following their favorite topics of interest. New newsgroups are added and old ones deleted every day.

Usenet can provide a unique information resource not readily accessible from any other source. If you are looking for personal anecdotes about products, especially computer-related hardware and software products, how-to information, practical advice, or the latest news stories, newsgroup archives may be a valuable resource.

### **Internet Chat**

Communication on the Internet goes even further than personal e-mail, newsgroups and mailing lists, to encompass real-time conversations (synchronous communication) among two or more people. Chat is available on the Internet through Internet Relay Chat or IRC. It consists of thousands of chat channels, each covering a different topic and with participants from all over the world.

### **Web Conferencing**

Many institutions are discovering new ways to integrate Internet communications into their organizations. One of the most popular ways is through the use of web or online conferencing.

Web conferencing is currently being used by businesses for employee training, meetings and general communication. Educational institutions are using web conferencing as a way to enhance on-site classes or distance education classes. Web conferencing is a tool which provides a way for "students" to share information, ask questions, get answers, discuss problems and work collaboratively. Conferencing provides opportunities to solve issues by providing a dynamic exchange of text, graphics, HTML links to information, audio, and video in a structured conversation organized by topic.

Web conferences may take place in "real-time" where all participants are communicating at the same pre-arranged time.

### **Requirements for connecting to the internet**

- **Internet service provider** – an internet service provider provides you with a connection to the internet and the software you will need to navigate.
- **telecommunication line** – a telephone line is required to connect you to the internet service provider.
- **Modem** – a modem converts a digital signal received from a computer into an analogue signal that can be sent along ordinary telephone lines, and back to digital at the other end.
- **Web browser** – a web browser is software used to view and download Web pages and various types of files such as text, graphics and video. Examples are Microsoft Internet Explorer or Netscape Navigator.

## 2.2 Client –server technologies

The **client–server model** of computing is a distributed application structure that partitions tasks or workloads between the providers of a resource or service, called servers, and service requesters, called clients.<sup>[1]</sup> Often clients and servers communicate over a computer network on separate hardware, but both client and server may reside in the same system. A server machine is a host that is running one or more server programs which share their resources with clients. A client does not share any of its resources, but requests a server's content or service function. Clients therefore initiate communication sessions with servers which await incoming requests.

### Description

The *client–server* characteristic describes the relationship of cooperating programs in an application. The server component provides a function or service to one or many clients, which initiate requests for such services.

*Functions* such as email exchange, web access and database access, are built on the client–server model. Users accessing banking services from their computer use a web browser client to send a request to a web server at a bank. That program may in turn forward the request to its own database client program that sends a request to a database server at another bank computer to retrieve the account information. The balance is returned to the bank database client, which in turn serves it back to the web browser client displaying the results to the user. The client–server

model has become one of the central ideas of network computing. Many business applications being written today use the client–server model.

## 2.3 Intranet and extranets

### What is an intranet?

In essence, an intranet is a business' own private website. It is a confidential business network that uses the same underlying structure and network protocols as the internet and is protected from unauthorised users by a firewall.

Intranets enhance existing communication between employees and provide a common knowledge base and storage area for everyone in your business. They also provide users with easy access to company data, systems and email from their desktops.

Because intranets are secure and easily accessible via the internet, they enable staff to do work from any location simply by using a web browser. This can help small businesses to be flexible and control office overheads by allowing employees to work from almost any location, including their home and customer sites.

Other types of intranet are available that merge the regular features of intranets with those often found in software such as Microsoft Office. These are known as online offices or web offices. Creating a web office will allow you to organise and manage information and share documents and calendars using a familiar web browser function, which is accessible from anywhere in the world.

Types of content found on intranets:

- **administrative** - calendars, emergency procedures, meeting room bookings, procedure manuals and membership of internal committees and groups
- **corporate** - business plans, client/customer lists, document templates, branding guidelines, mission statements, press coverage and staff newsletters
- **financial** - annual reports and organisational performance
- **IT** - virus alerts, tips on dealing with problems with hardware, software and networks, policies on corporate use of email and internet access and a list of online training courses and support
- **marketing** - competitive intelligence with links to competitor websites, corporate brochures, latest marketing initiatives, press releases, presentations
- **human resources** - appraisal procedures and schedules, employee policies, expenses forms and annual leave requests, staff discount schemes, new vacancies
- **individual projects** - current project details, team contact information, project management information, project documents, time and expense reporting
- **external information resources** - route planning and mapping sites, industry organisations, research sites and search engines

## **What is an extranet?**

An extranet is similar to an intranet but it is made accessible to selected external partners such as business partners, suppliers, key customers, etc, for exchanging data and applications and sharing information.

As with an intranet, an extranet can also provide remote access to corporate systems for staff who spend lots of time out of the office, for instance those in sales or customer support, or home workers.

Extranet users should be a well-defined group and access must be protected by rigorous identification routines and security features.

## **Why would you use an extranet?**

Businesses of all sizes are under increasing pressure to use online ordering, electronic order tracking and inventory management.

At the same time small businesses are keen to meet the demands of larger companies in terms of working flexibly, adopting new technologies and enabling the exchange of business information and transactions.

Extranets offer a cheap and efficient way for businesses to connect with their trading partners. It also means that your business partners and suppliers can access the information they need 24 hours a day.

The ability of the extranet to automate the trading tasks between you and your trading partners can lead to enhanced business relationships and help to integrate your business firmly within their supply chain.

## **2.4 Connecting technologies for networks such as broadband**

Signals are usually transmitted over some transmission media that are broadly classified in to two categories.

### **Guided Media:**

These are those that provide a conduit from one device to another that include twisted-pair, coaxial cable and fiber-optic cable. A signal traveling along any of these media is directed and is contained by the physical limits of the medium. Twisted-pair and coaxial cable use metallic that accept and transport signals in the form of electrical current. Optical fiber is a glass or plastic cable that accepts and transports signals in the form of light.

**Unguided Media:**

This is the wireless media that transport electromagnetic waves without using a physical conductor. Signals are broadcast either through air. This is done through radio communication, satellite communication and cellular telephony.

**Broadband**

The term ***broadband*** refers to a telecommunications signal of greater [bandwidth](#), in some sense, than another standard or usual signal (and the broader the band, the greater the capacity for traffic).





### **Chapter Review Questions**

1. What is the difference between the internet and the worldwide web?
2. What are the different connecting media under the guided media?
3. Explain the difference between the internet and the extranet.

Southerland K., Understanding the Internet : A clear Guide to Internet Technologies,  
Butterworth –Heinemann

## CHAPTER THREE

### THE E-MARKETPLACES STRUCTURES AND MECHANISMS



#### Learning Objectives

By the end of this chapter the learner shall be able to;

- A. Introduction to Electronic markets
- B. Electronic markets components participants
- C. E-Market places; storefronts and electronic malls
- D. Information portal
- E. Transactions, intermediation, and processes in E-commerce

### 3.1 Introduction to Electronic Markets

According to Bakos (1998), electronic markets play a central role in the economy, facilitating the exchange of information, goods, services, and payments. In the process, they create economic value for buyers, sellers, market intermediaries, and for society at large. Markets (electronic or otherwise) have three main functions: (1) matching buyers and sellers; (2) facilitating the exchange of information, goods, services, and payments associated with market transactions; and (3) providing an institutional infrastructure, such as a legal and regulatory framework that enables the efficient functioning of the market.

#### Electronic Markets

The major place for conducting EC transactions is the electronic market (e—market). An E-marketplace is an Online market, usually B2B, in which buyers and sellers exchange goods or services; the three types of e-market places are private, public and consortia.

The emergence of electronic marketplaces (also called e-marketplaces or marketspaces), especially internet—based ones, changed several of the processes used in trading and supply chains, These changes, driven by technology resulted in:

- Greater information richness of the transactional and relational environment
- Lower information search costs for buyers
- Diminished information asymmetry between sellers and buyers
- Greater temporal separation between time of purchase and time of possession of physical products purchased in the e-marketplace

- Greater temporal proximity between time of purchase and time of possession of digital products purchased in the e-marketplace
- The ability of buyers and sellers to be in different locations.

### 3.2 E-Marketplace Components and Participants

A marketplace includes electronic transactions that bring about a new distribution of goods and services. The major components and players in a marketplace are customers, sellers, goods and services (physical or digital), infrastructure, a front end, a back end, intermediaries and other business partners, and support services. A brief description of each follows:

- **Customers** - The 1.6 billion people worldwide who surf the Web are potential buyers of the goods and services offered or advertised on the Internet. These consumers are looking for bargains, customized items, collectors' items, entertainment, socialization, and more. They are in the driver's seat. They can search for detailed information, compare, bid, and sometimes negotiate. Organizations are the largest consumers, accounting for more than 85 percent of EC activities.
- **Sellers** - Millions of storefronts are on the Web, advertising and offering a huge variety of items. These stores are owned by companies, government agencies, or individuals. Every day it is possible to find new offerings of products and services. Sellers can sell direct from their Web sites or from e—marketplaces.
- **Products and services** - One of the major differences between the marketplace and the marketplace is the possible digitization of products and services in a marketplace. Although both types of markets can sell physical products, the marketplace also can sell digital products, which are goods that can be transformed to digital format and Instantly delivered over the Internet. In addition to digitization of software and music, it is possible to digitize dozens of other products and services.
- **Infrastructure** - The marketplace infrastructure includes electronic networks, hardware, software, and more. (EC infrastructure is presented in Chapter 1.
- **Front end** - Customers interact with a marketplace via a frontend. The components of the front end can include the sellers portal, electronic catalogs, a shopping cart, a search j engine, an auction engine, and a payment gateway.
- **Back end** - All the activities that are related to order aggregation and fulfillment, inventory management, purchasing from suppliers, accounting and finance, insurance, payment processing, packaging, and delivery are done in what is termed the back end of the business.
- **Intermediaries** - In marketing, an Intermediary is typically a third party that operates between sellers and buyers. Intermediaries of all kinds offer their services on the Web. The role of these electronic intermediaries is frequently different from that of regular

intermediaries (such as wholesalers). For example, online intermediaries create and manage the online markets. They help match buyers and sellers, provide some infrastructure services, and help customers and/or sellers to institute and complete transactions.

- **Other business partners** - In addition to intermediaries, several types of partners, such as shippers, use the Internet to collaborate, mostly along the supply chain.
- **Support services** - Many different support services are available, ranging from certification and escrow services (to ensure security) to content providers.

#### TYPES OF E-MARKETPLACES: FROM STOREFRONTS TO PORTALS

There are several types of e—marketplaces. The major B2C e—marketplaces are storefronts and Internet malls. B2B e—marketplaces include private sell—side e-marketplaces, buy—side marketplaces, and exchanges. A brief description of each follows:

**Electronic Storefronts** - An electronic or Web storefront refers to a single company's Web site where products and services are sold. It is an electronic store. The storefront may belong to a manufacturer (e. g. dell.com), to a retailer (e.g., walmart.com and wishlist.com.au), to individuals selling from home, or to another type of business. Note that companies that sell services (such as insurance) may refer to their storefronts as portals. A storefront includes several mechanisms that are necessary for conducting the sale. The most common mechanisms are an electronic catalog; a search engine that helps the consumer find products in the catalog; an electronic cart for holding items until checkout.

**Electronic Malls** - In addition to shopping at individual storefronts, consumers can shop in electronic malls . (e—malls). Similar to malls in the physical world, an e—mall (online mall) is an online shopping e-location where many stores are located. For example, Hawaii.com (hawaii.com) is an e-mall that aggregates Hawaiian products and stores. It contains a directory of product categories and the stores in each category. When a consumer indicates the category he or she is interested in, on the consumer is transferred to the appropriate independent storefront. This kind of a mall does not provide any shared services. It is merely a directory. Other malls do provide shared services (e.g., choicemall.com). Some malls are actually large click-and-mortar retailers; others are virtual retailers (e.g., buy.com).

**Types Of Stores And Malls** - Stores and malls are of several different types:

**General stores/malls.** These are large marketplaces that sell all types of products.

Examples are amazon.com, choicemall.com, shop4.vcomshop.com, spree.com, and the major public portals (yahoo.com, aol.com, and msn.com). All major department and discount stores also fall into this category.

**Specialized stores/malls.** These sell only one or a few types of products, such as books, flowers, wine, cars, or pet toys. Amazon.com started as a specialized e—bookstore but today is a generalized store. 1800flowers.c0m sells flowers and related gifts; fashionmall.com/beautyjungle specializes in beauty products, tips, and trends; and

cattoys.com sells cat toys.

**Regional versus global stores.** Some stores, such as e—grocers or sellers of heavy furniture, serve customers that live nearby. For example, parknshop.com serves the Hong Kong community; it will not deliver groceries to New York.

**Pure-play online organizations versus click-and-mortar stores.** Stores may be pure online organizations such as Amazon.com, that do not have physical stores. Others are physical stores that also sell online.

### Types of Marketplaces

The two types of E-Marketplaces are;

**Private marketplaces** which are online markets owned by a single company; may be either sell-side and/or buy-side e-marketplaces. A Sell-side marketplace is where one company sells either standard and/or customized products to qualified companies. The buy-side e-marketplace is where one company makes purchases from invited suppliers.

**Public E–Marketplaces** – are B2B markets usually owned and/or managed by an independent third party, that include many sellers and many buyers; also known as exchanges.

### 3.3 Information Portals

A portal is a mechanism that is used in e—marketplaces, e-stores, and other types of EC (eg., in Intranet, e-learning, etc.). An information portal is a single point of access through a web browser to business information inside and/or outside an organization. With the growing use of intranets and the Internet, many organizations encounter information overload at a number of different levels. Information is scattered across numerous documents, e—mail messages, and databases at different locations and in disparate systems. Finding relevant and accurate information is often time consuming and requires access to multiple systems.

As a consequence, organizations lose a lot of productive employee time. One solution to this problem is the use of a portal. A portal is an information gateway that attempts to address information overload by enabling people to search and access relevant information from disparate IT systems and the Internet, using advanced search and indexing techniques (such as Google's desktop), in an intranet-based environment.

#### Types of Portals

Portals appear under many descriptions and shapes. One way to distinguish among them is to look at their content, which can vary from narrow to broad, and their community or audience, which also can vary. The following are the major types of portals:

**Commercial (public) portals.** These portals offer content for diverse communities and are the most popular: portals on the Internet. Although they can be customized by the users; they are still intended for broad audiences and offer fairly routine content, some in real time (eg., a stock ticker and news about a few reselected items). Examples of such sites are yahoo.com, aol.com, and msn.com.

**Corporate portals.** Corporate portals provide organized access to rich content within relatively narrow corporate and partners' communities. They also are known as enterprise information portals or enterprise information portals. Corporate portals appear in different forms.

**Publishing portals.** These portals are intended for communities with specific interests. These portals involve relatively little customization of content, but they provide extensive online search features and some interactive capabilities. Examples of such sites are techweb.com and zdnet.com.

**Personal portals.** These target specific filtered information for individuals. They offer relatively narrow content and are typically very personalized, effectively having an audience of one.

**Mobile portals.** Mobile portals are portals that are accessible from mobile although most of the other portals mentioned here are PC based, increasing numbers of portals are accessible via mobile devices. One example of such a mobile portal is i—mode.

**Voice portals.** Voice portals are Web sites, usually portals, with audio interfaces. This means that they can be accessed by a standard telephone or a cell phone.

**Knowledge portals** – Knowledge portals enable access to knowledge by knowledge workers and enable collaboration.

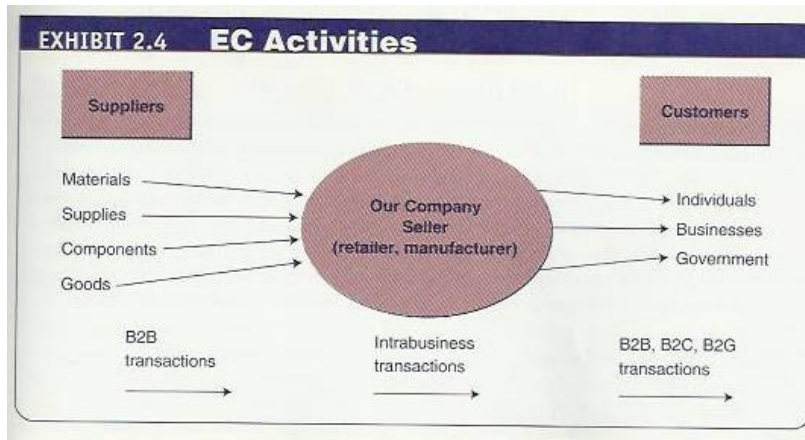
### 3.4 Transactions, intermediation, and processes in E-commerce

#### Sellers, buyers and Transactions

The major EC activity is electronic trading. Typically, a seller sells to customers. The seller buys from suppliers: either raw materials or finished goods. Internally, processes in the different functional areas are supported by enterprise software such as ERP and B2E activities. The customers can be individuals (B2C), businesses (B2B), or from government agencies (B2G). The customers place orders, and the seller fulfills them.

#### The roles and value of intermediaries in E-Marketplaces

Intermediaries (Brokers) play an important role in commerce by providing value-added activities and services to buyers and sellers. There are different types of intermediaries. The intermediaries that provide and/or control information flow are called infomediaries.



Online intermediaries are companies that facilitate transactions between buyers and sellers and receive a percentage of the value.

The two types of online intermediaries are brokers and infomediaries.

#### Brokers

A broker is a company that facilitates transactions between buyers and sellers. The following are different types of brokers:

- Buy/sell fulfillment. A corporation that helps consumers place buy and sell orders (eg., eTrade).
- Virtual mall. A company that helps consumers buy from a variety of stores (eg., ahoo! Stores).
- Metamediary. A firm that offers customers access to a variety of stores and provides them with transaction services, such as financial services (e. g., Amazon zShops).

- Bounty. An intermediary that will locate a person, place, or idea for a fee (e.g., BountyQuest (now defunct)).
- Search agent. A company that helps consumers compare different stores (eg., Shopping.com).
- Shopping facilitator. A company that helps consumers use online shops by providing currency conversion, language translation, payment features, and delivery solutions, and potentially a user-customized interface, (eg., MyOrbital.com).

### Infomediaries

Web sites that gather and organize large amounts of data and act as intermediaries between those who want the information and those who supply the information are called intermediaries (Webopedia 2006). There are two types of infomediaries:

- The first type offers consumers a place to gather information about specific products and companies before they make purchasing decisions. It is a third—party provider of unbiased information; it does not promote or try to sell specific products in preference over other products or act on behalf of any vendors (e. g., Autobytel.com and BizRate.com).
- The second type is not necessarily Web—based. It provides vendors with consumer information that will help the vendor develop and market products. The infomediary collects the personal information from the buyers and markets that data to businesses. The advantage of this approach is that consumer privacy is protected and some infomediaries offer consumers a percentage of the brokerage deals.

Intermediaries whether human or electronic, can address the following five limitations of direct intermediaries: Search costs, Lack of privacy, Incomplete information, contract risk and pricing inefficiencies.





### **Chapter Review Questions**

1. List the roles of intermediaries in e-markets.
2. What is the difference between a physical marketplace and an E-marketplace.
3. List the components of a marketplace
4. Explain the different types of portals

Turban E. D., Electronic Commerce, 2008 Managerial Perspective (Pearson International Edition) page 44-59

## CHAPTER FOUR

### Internet Consumer Retailing



#### Learning Objectives

By the end of this chapter the learner shall be able to;

- G. Introduction and definition of terms
- H. E-Tailing business models
- I. Travel and tourism services online
- J. Internet job market
- K. Real estate, insurance, and stock trading online

### 4.1 Introduction and Definition of Terms

A retailer is a sales intermediary, a seller that operates between manufacturers and customers. Even though many manufacturers sell directly to consumers, they supplement their sales through wholesalers and retailers (a multichannel approach). In the physical world, retailing is done in stores (or factory outlets) that customers must visit in order to make a purchase. Companies that produce a large number of products, such as Procter & Gamble, must use retailers for efficient distribution. Catalog sales offer companies and customers a relief from the constraints of space and time: Catalogs free a retailer from the need for a physical store from which to distribute products, and customers can browse catalogs on their own time. With the ubiquity of the Internet, the next logical step was for retailing to move online. Retailing conducted over the Internet is called electronic retailing, or e-tailing, and those who conduct retail business online are called e-tailers. E-tailing also can be conducted through auctions. E-tailing makes it easier for a manufacturer to sell directly to the customer, cutting out the intermediary (e.g., Dell and Godiva).

#### Products known to sell on the internet.

With approximately 118 million shoppers online in the United States in 2005, e-tailers appreciate the need to provide excellent choice and service to an ever-increasing cohort of potential customers. Hundreds of thousands of items are available on the Web from numerous vendors. The following categories are all selling well online; Travel (tickets and reservations), Consumer hardware and software, consumer electronics, office supplies, sports and fitness

goods, books and music, toys, health and beauty products, entertainment, clothing, jewelry, cars, services, pet supplies among others.

### **Characteristics of Successful E-Tailing**

Many of the same basic principles that apply to retail success also apply to e—tail success. Sound business thinking , visionary leadership , thorough competitive analysis and financial analysis, and the articulation of a well—thought—out EC strategy are essential. So, too, is ensuring appropriate infrastructure, particularly a stable and scalable technology infrastructure to support the online and physical aspects of EC business operations. With all else being equal in the online environment, goods with the following characteristics are expected to facilitate higher sales volumes:

- High brand recognition (eg., Lands End, Dell, Sony)
- A guarantee provided by highly reliable or well known vendors (eg., Dell, LL. Bean)
- Digitized format (eg., software, music, or videos)
- Relatively inexpensive items (e.g., office supplies, vitamins)
- Frequently purchased items (e. g., groceries, prescription drugs)
- Commodities with standard specifications e.g. books CDs airline tickets
- Well-known packaged items that cannot be opened even in a traditional store (e.g., foods, chocolates, vitamins)

<b>EXHIBIT 3.2    Retailing Versus E-Tailing</b>		
	<b>Retailers</b>	<b>E-Tailers</b>
Physical expansion (when revenue increases as the number of visitors grows)	<ul style="list-style-type: none"> <li>• Expansion of retailing platform to include more locations and space</li> </ul>	<ul style="list-style-type: none"> <li>• Expansion of e-commerce platform to include increased server capacity and distribution facilities</li> </ul>
Physical expansion (when revenue does not increase as the number of visitors grows)	<ul style="list-style-type: none"> <li>• May not need physical expansion</li> <li>• Expand marketing effort to turn "window shoppers" into effective shoppers</li> </ul>	<ul style="list-style-type: none"> <li>• May still need physical expansion to provide sustainable services</li> <li>• Expand marketing to turn "pane shoppers" into effective shoppers</li> </ul>
Technology	<ul style="list-style-type: none"> <li>• Sales automation technologies such as POS systems</li> </ul>	<ul style="list-style-type: none"> <li>• Front-end technologies benefit from browsing</li> <li>• Back-end technologies</li> <li>• "Information" technologies</li> </ul>
Customer relations	<ul style="list-style-type: none"> <li>• More stable due to nonanonymous contacts</li> <li>• More tolerable of disputes due to visibility</li> </ul>	<ul style="list-style-type: none"> <li>• Less stable due to anonymous contacts</li> <li>• More intolerant of disputes due to invisibility</li> </ul>
Cognitive shopping overhead	<ul style="list-style-type: none"> <li>• "Physical" relationships</li> <li>• Lower cognitive shopping overhead due to easy-to-establish mutual trust</li> </ul>	<ul style="list-style-type: none"> <li>• "Logical" relationships</li> <li>• Higher cognitive shopping overhead due to hard-to-establish mutual trust</li> </ul>
Competition	<ul style="list-style-type: none"> <li>• Local competition</li> <li>• Fewer competitors</li> </ul>	<ul style="list-style-type: none"> <li>• Global competition</li> <li>• More competitors</li> </ul>
Customer base	<ul style="list-style-type: none"> <li>• Local area customers</li> <li>• No anonymity</li> <li>• Fewer resources needed to increase customer loyalty</li> <li>• Customers remain loyal for future purchases</li> </ul>	<ul style="list-style-type: none"> <li>• Wide area customers</li> <li>• Anonymity</li> <li>• More resources needed to increase customer loyalty</li> <li>• Customers shift loyalty</li> </ul>

Sources: Compiled from Lee and Brandyberry (2003) and NDP.com (2001).

## 4.2 E-Tailing Business Models

In order to better understand e—tailing, let's look at it from the point of view of a retailer or a manufacturer that sells to individual consumers. The seller has its own organization and must also buy goods and services from others usually businesses B2B.

### Classification by Distribution Channel

A business model is a description of how an organization intends to generate revenue through its business operations. More specifically it is an analysis of the organizations customers and, from that, a discussion of how that organization will achieve profitability and sustainability by delivering goods and services (value) to those customers. E—tailing business models can be classified in several ways for example, some classify e-tailers by the scope of items handled (general purpose versus specialty e-tailing) or by the scope of the sales region covered (global versus regional), whereas others use classification by revenue models (see Chapter 1). Here we will classify the models by the distribution channel used, distinguishing five categories:

1. Mail-order retailers that go online. Most traditional mail-order retailers, such as QVC, Sharper Image, and Lands' End, simply added another distribution channel—the Internet. Several of these retailers also operate physical stores, but their main distribution channel is direct marketing.
2. Direct marketing from manufacturers. Manufacturers, such as Dell, Nike, Lego, and Sony, market directly online from company sites to individual customers. Most of these manufacturers are click-and—mortar, also selling in their own physical stores or via retailers. However, the manufacturer may be a pure—play company (e.g., Dell).
3. Pure—play e-tailers. These e—tailers do not have physical stores, only an online sales presence. Amazon.com is an example of a pure—play e-tailer.
4. Click-and-mortar retailers. These are of two sorts, depending on how the businesses were originally founded. Originally, click-and-mortar referred to traditional businesses that developed Web sites to support their business activities in some way (e.g., walmart.com, homedepot.com, and sharperimage.com). However, we are now seeing the reverse trend. A small number of successful e-tailers are now creating physical storefronts, leveraging the brand power of the online environment to support more traditional trading activities via stores. For example, Expedia.com.
5. Internet (online) malls. these malls include large numbers of independent storefronts.

EXHIBIT 3.4 Other B2C Business Models	
Model Name	Description
Transaction brokers	Electronically mediate between buyers and sellers. Popular in services, the travel industry, the job market, stock trading, and insurance.
Information portals	Besides information, most portals provide links to merchants, for which they are paid a commission (affiliate marketing). Some provide hosting and software (e.g., <i>store.yahoo.com</i> ); some also sell.
Community portal	Combines community services with selling or affiliate marketing (e.g., <i>virtualcommunities.start4all.com</i> ).
Content creators or disseminators	Provide content to the masses (news, stock data). Also participate in the syndication chain (e.g., <i>espn.com</i> , <i>reuters.com</i> , <i>cnn.com</i> ).
Viral marketing	Use e-mail or SMS to advertise. Also can sell direct or via affiliates (e.g., <i>blueskyfrog.com</i> ).
Market makers	Create and manage many-to-many markets (e.g., <i>chemconnect.com</i> ); also auction sites (e.g., <i>ebay.com</i> , <i>dellauction.com</i> ). Aggregate buyers and/or sellers (e.g., <i>ingrammicro.com</i> ).
Make(build)-to-order	Manufacturers that customize their products and services via online orders (e.g., <i>dell.com</i> , <i>nike.com</i> , <i>jaguar.com</i> ).
B2B2C	Manufacturer sells to a business but delivers to individual customers ( <i>godiva.com</i> ).
Service providers	Offer online payments, order fulfillment (delivery), and security (e.g., <i>paypal.com</i> , <i>escrow.com</i> ).

### **4.3 Travel and Tourism Services On-line**

Online travel bookings and associated travel services are one of the most successful e-commerce implementations, with estimates of sales of \$73.4 billion in 2006. However this was expected to increase by 34% by 2010. The number of travelers using the Internet to plan and book trips is still growing significantly, with some 79 million Americans using the Internet to research travel options and destination information in 2005. Of interest is that now 82 percent of those who do this research online also convert to booking their travel online. They most often purchase airline tickets, accommodation, and car rentals online, but future growth is expected in associated events such as cultural event tickets, theme/ amusement park tickets, and tickets for sporting events (Tia.org 2005). The most popular types of Web sites are online travel agencies (such as Expedia, Travelocity, and Priceline).

The revenue models of online travel services include direct revenues (commissions), revenue from advertising, lead-generation payments, consultancy fees, subscription or membership fees, revenue-sharing fees, and more. With such rapid growth and success, the travel industry seems to have matured beyond initial concerns such as trust, loyalty, and brand image.

## **Services Provided**

Virtual travel agencies offer almost all of the services delivered by conventional travel agencies, from providing general information to reserving and purchasing tickets, accommodations, and entertainment. In addition, they often provide services that most conventional travel agencies do not offer, such as travel tips provided by people who have experienced certain situations (e.g., a visa problem), electronic travel magazines, fare comparisons, city guides, currency conversion calculators, fare tracking (free e-mail alerts on low fares to and from a city and favorite destinations), worldwide business and place locators, an outlet for travel accessories and books, experts' opinions, major international and travel news, detailed driving maps and directions within the United States and several other countries (see [infohub.com](http://infohub.com)), chat rooms and bulletin boards, and frequent-flier deals. In addition, some offer several other innovative services, such as online travel auctions.

Some benefits are; The amount of free information is tremendous, and it is accessible at any time from any place. Substantial discounts can be found, especially for those who have time and patience to search for them. Providers of a travel services also benefit: Airlines, hotels, and cruise lines are selling otherwise-empty spaces. Also, direct selling saves the provider's commission and its processing.

## **4.4 The Internet Job Market**

The Internet offers a rich environment for job seekers and for companies searching for hard to find employees. Nearly all Fortune 500 companies now use the Internet for some of their, recruitment requirements, and studies reveal that online resources are now the most popular way to find suitably qualified applicants for job vacancies (Careerbuilder.com 2006). Online, job recruitment revenues and volume overtook print ad classifieds at the end of 2005, and in 2006 were estimated to reach \$2.3 billion.

The following parties use the Internet job market:

- **Job seekers.** Job seekers can reply to employment advertisements Or, they can take the initiative and place their CV's on their own homepages or on others' Web sites, send



messages to members of newsgroups asking for referrals, and use the sites of recruiting firms, such as careerbuilder.com,

- **Employers seeking employees.** Many organizations, including public institutions, advertise openings on their Web sites. Others advertise job openings on popular public portals, online newspapers, bulletin boards, and with recruiting firms. Employers can conduct interviews and administer interactive intelligence, skills, and psychological tests on the Web. Some employers, such as Home Depot, have kiosks in some of their stores on which they post job openings and allow applicants to complete an application electronically
- **Job agencies.** Hundreds of job agencies are active on the Web. They use their own Web pages to post available job descriptions and advertise their services in e-mails and at other Web sites. job agencies and/ or employers use newsgroups, online forums, bulletin boards, Internet commercial resume services, and portals such as Yahoo! Hotjobs and myjobseye.com. Most portals are free; others charge membership fees but offer many services.
- **Government agencies and institutions.** Many government agencies advertise openings for government positions on their Web sites and on other sites; some are required by law to do so. In addition, some government agencies use the Internet to help job seekers find jobs elsewhere, as is done in Hong Kong and the Philippines.

EXHIBIT 3.6 Advantages of the Electronic Job Market for Job Seekers and Employers	
Advantages for Job Seekers	Advantages for Employers
<ul style="list-style-type: none"> <li>• Can find information on a large number of jobs worldwide</li> <li>• Can communicate quickly with potential employers</li> <li>• Can market themselves directly to potential employers (e.g., <i>quintcareers.com</i>)</li> <li>• Can write and post resumes for large-volume distribution (e.g., Personal Search Agent at <i>careerbuilder.com</i>, <i>bossring.com</i>)</li> <li>• Can search for jobs quickly from any location</li> <li>• Can obtain several support services at no cost (e.g., <i>hotjobs.yahoo.com</i> and <i>monster.com</i> provide free career-planning services)</li> <li>• Can assess their market value (e.g., <i>wageweb.com</i> and <i>rileyguide.org</i>; look for salary surveys)</li> <li>• Can learn how to use their voice effectively in an interview (<i>greatvoice.com</i>)</li> <li>• Can access newsgroups that are dedicated to finding jobs (and keeping them)</li> </ul>	<ul style="list-style-type: none"> <li>• Can advertise to large numbers of job seekers</li> <li>• Can save on advertisement costs</li> <li>• Can reduce application-processing costs by using electronic application forms</li> <li>• Can provide greater equal opportunity for job seekers</li> <li>• Increased chance of finding highly skilled employees</li> <li>• Can describe positions in great detail</li> <li>• Can conduct interviews online (using video teleconferencing)</li> <li>• Can arrange for testing online</li> <li>• Can view salary surveys for recruiting strategies</li> </ul>



#### **4.5 Real Estate, Insurance, and Stock Trading On Line**

Online financial services are exploding on the Internet and are being embraced by customers. According to Dandapani (2004), online financial services essentially altered the industry landscape.

##### **Real Estate On Line**

The increasing presence and realization of e—commerce possibilities and opportunities in the real estate business is creating a momentum and a readiness for change and slowly adding pressure to transform the old ways of doing things in this previously stable and conservative business. Changes are reaching a tipping point, beyond which the nature of the real estate business will be altered. The changes have been some time in coming, but after a long period of quantitative changes experts are beginning to see some fundamental qualitative changes in the industry. Despite the fact that the Internet is shaking up the real estate industry, the emerging pattern is more complex than the simple disintermediation of agents.

Examples of real estate applications are; Advice to consumers on buying or selling a home, Commercial real estate listings, Listings of residential real estate, Information on current mortgage rates, lenders who want to issue mortgages etc.

##### **On-line Insurance**

The uptake of EC in the insurance industry is comparatively slow in several countries. An increasing number of companies use the Internet to offer standard insurance policies, such as auto, home, life, or health, at a substantial discount. Furthermore, third-party aggregators offer free comparisons of available policies. Several large insurance and risk-management companies offer comprehensive insurance contracts online.

##### **On-line stock trading**

In the late 1990s, online trading was an exciting innovation in the financial services industry. However, the dot-com crash and increasing competition saw consolidation, cost-cutting, and price reduction become the order of the day. Today the majority of stock trading is carried out

via the Internet, with 12 brokerage firms handling 75 percent of online trades (Cropper 2004). The top three brokerage firms after the 2005 mergers are Ameritrade, Charles Schwab, and E-Trade (Regan 2005a).

The commission for an online trade is considerably low. With online trading, there are no busy telephone lines, and the chance for error is small because there is no oral communication in a frequently noisy environment. Orders can be placed from anywhere, at any time, day or night, and there is no biased broker to push a sale.

Furthermore, investors can find a considerable amount of free information about specific companies or mutual funds.



### **Chapter Review Questions**

5. List the B2C distribution channel models?
6. Describe the click and mortar approach
7. What are the major advantages of the electronic job market tot the candidate?
8. In the Kenyan market what commodities do you thinks would sell fast online? Why?

Turban E. D., Electronic Commerce, 2008 Managerial Perspective (Pearson International Edition) page 90-117.

## CHAPTER FIVE

### CONSUMER BEHAVIOUR MARKET RESEARCH AND ADVERTISEMENT



#### Learning Objectives

By the end of this chapter the learner shall be able to;

- i. The consumer decision making process
- ii. Personalization, loyalty, satisfaction and trust in EC
- iii. Methods of conduction market research online

#### 5.1 The consumer decision making process

When consumers making purchasing decisions, people play different roles in the decision-making process. The major roles are as follows;

- Initiator. The person who first suggests or thinks of the idea of buying a particular product or service.
- Influencer. A person whose advice or view carries some weight in making a final purchasing decision.
- Decider. The person who ultimately makes a buying decision or any part of it whether to buy what to buy how to buy, or where to buy
- Buyer. The person who makes an actual purchase.
- User. The person who consumes or uses a product or service.

If one individual plays all of these roles, the marketer needs to understand and target that individual. When more than one individual plays these different roles, it becomes more difficult to properly target advertising and marketing efforts.

#### A generic Purchasing-decision model

A general purchasing—decision model consists of five major phases (Kotler 2005). In each phase, we can distinguish several activities and, in some, one or more decisions. The five phases are (1) need identification, (2) information search, (3) evaluation of alternatives, (4) purchase and deliver , and (5) post purchase behavior Although these phases offer a general idea to the consumer decision-making process, one should not assume that every consumer's decision-

making process will necessarily follow this order. In fact, some consumers may proceed to a point and then revert back to a previous phase, or they may skip a phase altogether.

### A Customer Decision Model In Web Purchasing

The preceding generic purchasing—decision model was widely used in research on consumer-based EC. Below is a framework built by O’Keefe and IVlcEachern (1998) for a Web purchasing model. As shown in Exhibit 4.2, each of the phases of the purchasing model can be supported by both Consumer Decision Support System (CDSS) facilities and Internet and Web facilities. The CDSS facilities support the specific decisions in the process.

<b>EXHIBIT 4.2 Purchase Decision-Making Process and Support System</b>		
<b>Steps in the Decision-Making Process</b>	<b>CDSS Support Facilities</b>	<b>Generic Internet and Web Support Facilities</b>
Need recognition ↓	Agents and event notification	Banner advertising on Web sites URL on physical material Discussions in newsgroups
Information search ↓	Virtual catalogs Structured interaction and question/answer sessions Links to (and guidance on) external sources	Web directories and classifiers Internal search on Web site External search engines Focused directories and information brokers
Evaluation, negotiation, selection ↓	FAQs and other summaries Samples and trials Models that evaluate consumer behavior Pointers to and information about existing customers	Discussions in newsgroups Cross-site comparisons Generic models
Purchase, payment, and delivery ↓	Ordering of product or service Arrangement of delivery	Electronic cash and virtual banking Logistics providers and package tracking
After-purchase service and evaluation ↓	Customer support via e-mail and newsgroups	Discussions in newsgroups

Source: O’Keefe, R. M., and T. McEachern (1998).

## 5.2 Personalization, Loyalty, Satisfaction and Trust in EC

Internet marketing facilitates the use of market segmentation and one-to-one marketing. The issues related to personalization are; personalization, collaborative filtering, customer loyalty permission marketing and trust.

### Personalization in E-Commerce

Personalization refers to the matching of services, products, and advertising content to individuals and their preferences. The matching process is based on what a company knows about the individual user. This knowledge is usually referred to as a user profile. The user profile

defines customer preferences, behaviors, and demographics. Profiles can be generated in several ways. The major strategies used to compile user profiles include the following:

- Solicit information directly from the user. This is usually done by asking the user to fill in a questionnaire or by conducting an interview with the user.
- Observe what people are doing online. A common way to observe what people are doing online is through use of a cookie—a data file that is stored on the user’s hard drive, frequently without disclosure or the user’s consent. Sent by a remote Web server over the Internet, the information stored will surface when the user’s browser again accesses the specific Web server, and the cookie will collect information about the user’s activities at the site. This is a common strategy but controversial in E-commerce.
- Build from previous purchase patterns. For example Amazon.com builds customer profiles to recommend books, CDs, and other products, based on what customers have purchased before, rather than asking customers, using cookies, or doing market research.
- Perform marketing research. Firms can research the market using tools that will be described in the next chapter.
- Make inferences. Infer from information provided by customers on other issues or by analyzing similar customers.

The Internet offers online retailers different ways to tailor services to their customers, including:

- Personalized services. Services built on a one—to—one communication channel requiring personal data from customers.
- Individual services. Recommendation services built on the sequence of clicks, page requests, or items that have been added to the shopping cart. This approach improves the shopping experience while also maintaining consumer anonymity.
- Universal services. Consumers use the product search function or read customer reviews. This approach does not require personal or context data.

### **Customer Loyalty**

Customer loyalty refers to “a deep commitment to rebuy or repatronize a preferred product/service consistently in the future, thereby causing repetitive same-brand or same brand-set purchasing, despite situational influences and marketing efforts having the potential to cause

switching behavior”. Attracting and retaining loyal customers remains the most important issue for any selling company including e-tailers. Increased customer loyalty can bring cost savings to a company in various ways: lower marketing and advertising costs, lower transaction costs, lower customer turnover expenses, lower failure costs such as warranty claims, and so on. Customer loyalty also strengthens a company’s market position because loyal customers are kept away from the competition.

### **E-Loyalty**

E-loyalty refers to a customer’s loyalty to an e-tailer or a manufacturer that sells directly online or to loyalty programs delivered online or supported electronically. Customer acquisition and retention is a critical success factor in e-tailing. The expense of acquiring a new customer can be over \$100; even for Amazon.com, which has a huge reach, it is more than \$15. In contrast, the cost of maintaining an existing customer at Amazon.com is \$2 to \$4. Companies can foster e-loyalty by learning about their customers needs, interacting with customers, and providing superb customer service.

## **Satisfaction In EC**

Given the changing dynamics of the global marketplace and the increasingly intense competition, delivering world-class customer online experience becomes a differentiating strategy. Satisfaction is one of the most important consumer reactions in the B2C online environment. Maintaining customer satisfaction in the online shopping experience is as important as the high level of satisfaction associated with several key outcomes (e.g., repeat purchase, positive word-of-mouth, and so on). Eighty percent of highly satisfied online consumers would shop again within 2 months, and 90 percent would recommend Internet retailers to others. However, 87 percent of dissatisfied consumers would permanently leave their Internet retailers without any complaints.

If certain Web site features, such as reliability of content, loading speed, and usefulness, fail to perform properly, customer satisfaction will drop dramatically. In contrast, if features such as those that make the usage enjoyable, entertaining, and fun perform well, they will surprise customers and result in a radical jump in customer satisfaction.

## **Trust In EC**

Trust is the psychological status of depending on another person or organization to achieve a planned goal. When people trust each other, they have confidence that as transaction partners they will keep their promises. However, both parties in a transaction assume some risk. In the electronic marketplace, sellers and buyers do not meet face to face. Trust is particularly important in global EC transactions due to the difficulty of taking legal action in cases of a dispute or fraud and the potential for conflicts caused by differences in culture and business environments. In addition to sellers and buyers trusting each other, both must have trust in the EC computing environment and in the EC infrastructure. If people do not trust the security of the EC infrastructure, they will not feel comfortable about using credit cards to make EC purchases. Increasing Trust in EC Consumer trust is fundamental to successful online retailing. Urban et al. (2000) advocated that trust is the currency of the Internet. Trust can be increased by;

- **Affiliating with an Objective Third Party.** This approach aims at building consumer trust by affiliating with trusted third parties. Internet stores can put hypertext links on their Web sites to other trusted targets, including reputable companies or well-known portals.



- Establish Trustworthiness. Trustworthiness can be achieved through three key elements: integrity competence, and security. Integrity conveys an overall sense of the ability of the Internet store to build an image of strong justice and fulfill all of the promises that have been made to the customers (i.e., offering money—back guarantee with the products and clearly stating the guarantee policy on the Web.

### **5.3 Market Research For EC**

The objective of market research is to discover information and knowledge that explain the associations among consumers, products, marketing methods, and marketers. Its aim is to discover marketing opportunities and issues, to create marketing plans, to better understand the purchasing process, and to evaluate marketing performance. On the Web, the objective is to turn browsers into buyers. Market research includes gathering information about topics such as the economy industry firms, products, pricing, distribution, competition, promotion, and consumer purchasing behavior.

#### **Methods for Conducting Market Research Online**

EC market research can be conducted through conventional methods, or it can be done with the assistance of the Internet. On the Web market researchers can conduct a very large study much more cheaply than with other methods. The larger the sample size, the larger the accuracy and the predictive capabilities of the results.

Below are the methods used to conduct market research on-line

1. Implementing Web-based surveys - these are becoming popular with companies and researchers
2. Online focus groups - Several research firms create panels of qualified Web regulars to participate in online focus groups
3. Hearing directly from customers - customers are asked directly what they think about a product or service.
4. Observing customers - To avoid some of the problems of online surveys, especially the giving of false information, some marketers choose to learn about customers by observing

their behavior rather than by asking them questions below are some of the methods that can be used to collect customer information.

- ✓ **transaction log.** A record of user activities at a company's Web site
- ✓ **clickstream behavior.** Customer movements on the Internet
- ✓ **Web bugs.** Tiny graphics files embedded on e-mail messages and in Web sites that transmit information about the users and their movements to a Web server
- ✓ **Spyware.** Software that gathers user information over an Internet connection without the user's knowledge
- ✓ **clickstream data.** Data that occur inside the Web environment; they provide a trail of the user's activities (the user's clickstream behavior) in the Web site
- ✓ **Collaborative filtering.** A market research and personalization method that uses customer data to predict, based on formulas derived from behavioral sciences, what other products or services a customer may enjoy; predictions can be extended to other customers with similar profiles

### **Limitations of Online Market Research**

- Too much data may be available
- To use data properly, it should be organized, edited, condensed, and summarized
- The solution to this problem is to automate the process by using data warehousing and data mining
- Some of the limitations of online research methods are:
  - Accuracy of responses
  - Loss of respondents because of equipment problems
  - The ethics and legality of Web tracking
  - Lack of representativeness in samples of online users



### **Chapter Review Questions**

9. Relate cookies, Web bugs, and spy ware to market research.
10. Describe the limitations of online market research.
11. Describe the issue of trust in EC and how to increase it.
12. Explain how personalization is done in E-Commerce?

Turban E. D., Electronic Commerce, 2008 Managerial Perspective (Pearson International Edition) page 167-179.

## CHAPTER SIX

### INTERNET MARKETING



#### **Learning Objectives**

By the end of this chapter the learner shall be able to;

- i. Explain the marketing and Advertising processes in Business to Business(B2B)
- ii. Explain the concept of Web advertising
- iii. Explain the different Online advertising methods

### **6.1 Internet Marketing in B2B**

The marketing and advertising processes for businesses differ considerably from those used for selling to individual consumers. For example, traditional (offline) B2B marketers use methods such as trade shows, advertisements in industry magazines, paper catalogs, and salespeople who call on existing customers and potential buyers. In the digital world, these approaches may not be effective, feasible, or economical. Therefore, organizations use a variety of online methods to reach business customers. Popular methods include online directory services, matching services, the marketing and advertising services of exchanges, co branding or alliances, affiliate programs, online marketing services or e-communities.

#### **Methods for B2B Online Marketing**

The following are the methods that can be used to conduct B2B Online marketing;

Targeting customers;

A B2B company whether a provider of goods or services, an operator etc can contact all of its customers individually or when they are part of a well defined group. Another method of bringing new customers to a B2B site is through an affiliation service. A company pays a small commission every time the affiliate company directs traffic to its site.

## 6.2 Web Advertising

Advertising is an attempt to disseminate information in order to affect buyer—seller transactions. In traditional marketing, advertising was impersonal, one-way mass communication that was paid for by sponsors. Telemarketing and direct mail ads were attempts to personalize advertising to make it more effective. These direct marketing approaches worked fairly well but were expensive and slow and seldom truly one-to-one interactive.

One of the problems with direct mail advertising was that the advertisers knew very little about the recipients. Market segmentation by various characteristics (e.g., age, income gender) helped a bit but did not solve the problem.

The Internet introduced the concept of interactive marketing, which has enabled marketers and advertisers to interact directly with customers. In interactive marketing, a consumer can click an ad to obtain more information or send an e-mail to ask a question. Besides the two-way communication and e-mail capabilities provided by the Internet, vendors also can target specific groups and individuals which they want to spend their advertising dollars.

### Some Internet Advertising Terminology

- **ad views:** the number of times users call up a page that has a banner on it during a specific period; known as *impressions* or *page views*
- **click (click-through or ad click):** A count made each time a visitor clicks on an advertising banner to access the advertiser's Web site
- **CPM (cost per thousand impressions)** The fee an advertiser pays for each 1,000 times a page with a banner ad is shown
- **conversion rate:** The percentage of clickers who actually make a purchase
- **click-through rate (or ratio):** The percentage of visitors who are exposed to a banner ad and click on it
- **click-through ratio:** The ratio between the number of clicks on a banner ad and the number of times it is seen by viewers; measures the success of a banner in attracting visitors to click on the ad
- **hit:** A request for data from a Web page or file
- **visit:** A series of requests during one navigation of a Web site; a pause of a certain length of time ends a visit

- **unique visits:** A count of the number of visitors entering a site, regardless of how many pages are viewed per visit
- **stickiness:** Characteristic that influences the average length of time a visitor stays in a site

### **Why Internet Advertising?**

The major traditional advertising media are television (about 36 percent), newspapers (about 35 percent), magazines (about 14 percent), and radio (about 10 percent).

Although Internet advertising is a small percentage of the \$120-billion-a-year advertising industry (about 8 percent in 2004), it is growing rapidly.

Today, online-advertising technology has advanced to the point where marketers can see how and if their ads result in increased sales, even for target ads based on demographics, location, and other factors. Such analysis of offline advertising is not nearly as fast, easy, or inexpensive.

Companies advertise on the Internet for several reasons

- Viewers are migrating to the Internet. The UCLA Center for Communication Policy (2004) found that Internet users are spending time online that they previously spent viewing television. Worldwide, Internet users are spending significantly less time watching television and more time using the Internet at home.
- Advertisers are limited in the amount of information they can gather about the television and print ads
- Advertisers are not able to track the number of people who actually view an ad in a print publication or on TV but its possible on the internet.
- Cost. Online ads are sometimes cheaper than those in other media. In addition, ads can be updated at any time with minimal cost.
- Richness of format. Web ads can effectively use the convergence of text, audio, graphics, and animation. In addition, games, entertainment, and promotions can be easily combined in online advertisements.
- Personalization. Web ads can be interactive and targeted to specific interest groups and/or individuals; the Web is a much more focused medium.
- Timeliness. Internet ads can be fresh and up-to-the-minute.

- **Location-basis.** Using wireless technology and GPS, Web advertising can be location based; Internet ads can be sent to consumers whenever they are in a specific time and location (e.g., near a restaurant or a theater).
- **Linking.** It is easy to link from an online ad to a storefront—one click does it.
- **Digital branding.** Even the most price—conscious online shoppers are willing to pay premiums for brands they trust.

### 6.3 Online Advertising Methods

There are several online advertising methods. Below are some of the common ones;

- **Advertising networks-** Specialized firms that offer customized Web advertising, such as brokering ads and targeting ads to select groups of consumers
- **Banner** - On a Web page, a graphic advertising display linked to the advertiser's Web page
- **keyword banners** - Banner ads that appear when a predetermined word is queried from a search engine
- **random banners** - Banner ads that appear at random, not as the result of the user's action
- **banner swapping** - An agreement between two companies to each display the other's banner ad on its Web site
- **banner exchanges** - Markets in which companies can trade or exchange placement of banner ads on each other's Web sites
- **pop-up ad** - An ad that appears in a separate window before, after, or during Internet surfing or when reading e-mail
- **pop-under ad** - An ad that appears underneath the current browser window, so when the user closes the active window the ad is still on the screen
- **interstitial** - An initial Web page or a portion of it that is used to capture the user's attention for a short time while other content is loading



### **Chapter Review Questions**

13. Describe the reasons for the growth in Web advertising.
14. List the major characteristics of web advertising.
15. Define banner swapping and banner exchanges.
16. Explain why an organization may prefer Web advertising to traditional advertising media?

Turban E. D., Electronic Commerce, 2008 Managerial Perspective (Pearson International Edition) page 182-190.



## CHAPTER SEVEN

### E-COMMERCE SECURITY



#### Learning Objectives

By the end of this chapter the learner shall be able to;

- i. Explain the challenges of stopping E-commerce crimes
- ii. Explain the terms confidentiality, integrity and availability
- iii. Explain the security tools; both hardware and software
- iv. Explain the different types of threats and Attacks; both Technical and Non-technical
- v. Explain how E-commerce communications can be secured

#### 7.1 Why it's Difficult to stop E-Commerce crimes

It is quite difficult to stop E-crimes for the following reasons;

- Strong EC security makes online shopping inconvenient and demanding on customers. The EC industry does not want to enforce safeguards that would discourage online commerce.
- A second reason is the lack of cooperation from credit card issuers and foreign ISPs. There are insufficient incentives for credit card issuers to share leads on criminal activity with each other or law enforcement. It is much cheaper to block a stolen card and move on than to invest time and money in a prosecution with an uncertain outcome.
- The third reason pertains to customers. Online shoppers are to blame for not taking necessary precautions to avoid becoming a victim. Some shoppers rely too heavily on fraud protection provided by credit card issuers ignoring the bigger risk of identity theft. Phishing is rampant because some people respond to it making it profitable.
- A fourth reason arises from IS design and security architecture issues. It is well known that preventing vulnerability during the EC design and pre-implementation stage is far less expensive than mitigating problems later. The IS staff needs to plan security from the design stage because simple mistakes, such as not insuring that all traffic into and out of network pass through a firewall, are often to blame for letting in hackers.

## 7.2 Confidentiality, Integrity, and Availability

The success and security of EC depends on the confidentiality integrity and availability of information and the business Web site.

1. Confidentiality is the assurance of data privacy the data or transmitted message is encrypted so that it is readable only by the person for whom it is intended. Depending on the strength of the encryption method, intruders or eavesdroppers might not be able to break the encryption to read the data or text. The confidentiality function prevents unauthorized disclosure of information.
2. Integrity is the assurance that data is accurate or that a message has not been altered. It means that stored data has not been modified without authorization; a message that was sent is the same message that was received. The integrity function detects and prevents the unauthorized creation, modification, or deletion of data or messages.
3. Availability is the assurance that access to data, the Web site, or other EC data service is timely available, reliable, and restricted to authorized users.

Although the basic security concepts important to information on the Internet are confidentiality integrity and availability concepts relating to the people (users) are authentication, authorization, and nonrepudiation. Confidentiality, integrity availability authentication, authorization, and nonrepudiation are all assurance processes.

All the Confidentiality, integrity availability functions depend on Authentication, Authorization and Nonrepudiation;

**Authentication** is a process to verify (assure) the real identity of an entity which could be an individual, computer, computer program, or EC Web site. For transmissions, authentication verifies that the sender of the message is who the person or organization claims to be.

**Authorization** is the process of determining what the authenticated entity is allowed to access and what operations it is allowed to perform. Authorization of an entity occurs after authentication.

**Nonrepudiation** is Closely associated with authentication is, which is assurance that online customers or trading partners cannot falsely deny (repudiate) their purchase, transaction, and so on. For EC and other electronic transactions, including cash machines or ATMs, all

parties in a transaction must be confident that the transaction is secure; the parties are who they say they are.

### 7.3 Threats and Attacks

Generally there are two types of attacks: nontechnical and technical. Although most attacks involve a combination of the two types;

**Nontechnical attacks** are those in which a perpetrator uses some form of deception or persuasion to trick people into revealing information or performing actions that can compromise the security of a network.

**Technical attacks** are attacks perpetrated using software and systems knowledge or expertise. The time-to-exploitation of today's most sophisticated spyware and worms has shrunk from months to days. Time-to-exploitation is the elapsed time between when a vulnerability is discovered and the time it is exploited.

There are several technical attacks that could be used as follows;

**Denial of service (DOS) attack:** Is an attack on a website in which an attacker uses specialized software to send a flood of data packets to the target computer with the aim of overloading its resources.

**Server and Web Page Hijacking:** Web servers and Web pages can be hijacked and configured to control or redirect unsuspecting users to scam or phishing sites. This technique uses 302 server redirects. This exploit allows any Web master (including criminals) to have his or her own "virtual pages" rank for pages belonging to another Web master. When effectively employed, this technique will allow the offending Web master ("the hijacker") to displace the pages of the "target" or victim Web site in the search engine results pages (SERPS). This causes search engine traffic to the target Web site to vanish or redirects traffic to any other page of choice.

**Botnets:** This is a huge number of hijacked internet computers that have been setup to forward traffic, including spam and viruses, to other computers on the internet.

**Malicious Code: Viruses, Worms, and Trojan Horses:** Sometimes referred to as malware (for malicious software), malicious code is classified by how it propagates (spreads). A virus is a piece of software code that inserts itself into a host, including the operating systems; running its host program activates the virus. A virus has two components. First, it has a propagation

mechanism by which it spreads. Second, it has a payload that refers to what the virus does once it is executed. Sometimes a particular event triggers the virus's execution.

**Phishing** is a way of attempting to acquire sensitive information such as usernames, passwords and credit card details by masquerading as a trustworthy entity in an electronic communication. Communications purporting to be from popular social web sites, auction sites, online payment processors or IT administrators are commonly used to lure the unsuspecting public.

## **7.4 Securing E-Commerce Communications**

Most organizations rely on multiple technologies to secure their networks. These technologies can be divided into two major groups: those designed to secure communications across the network and those designed to protect the servers and clients on the network. Some technologies are considered below;

### **Access Control**

Network security depends on access control. Access control determines who (person, program, or machine) can legitimately use a network resource and which resources he, she, or it can use. A resource can be anything—Web pages, text files, databases, applications, servers etc. Typically access control lists (ACLs) define which users have access to which resources and what rights they have with

respect to those resources (ie., read, view, write, print, copy delete, execute, modify or move). Each resource needs to be considered separately and the rights of particular users or categories of users. Access control can also be implemented using biometric systems. Fingerprint scanners, iris scanners, facial recognition systems, and voice recognition all are examples of biometric systems that recognize a person by some biological characteristic or trait.

### **Public Key Infrastructure**

The “state of the art” in authentication rests on the public key infrastructure (PKI). In this case, the something a user has is not a token, but a certificate. PKI has become the cornerstone for secure e—payments. It refers to the technical components, infrastructure, and practices needed to enable the use of public key encryption, digital signatures, and digital certificates with a network application. PKI also is the foundation of a number of network

applications, including SCM, VPNs, secure e-mail, and intranet applications. There are several techniques that could be applied in this;

**Private and Public Key Encryption:** PKI is based on encryption. Encryption is the process of transforming or scrambling (encrypting) data in such a way that it is difficult, expensive, or time-consuming for an unauthorized person to unscramble (decrypt) it. The encryption algorithm is the set of procedures or mathematical functions to encrypt or decrypt a message.

**Symmetric key system:** is an encryption system that uses the same key to encrypt and decrypt the message.

**Public key encryption:** This is a method of encryption that uses a pair of matched keys—a public key to encrypt a message and a private key to decrypt it or vice versa.

**Digital signatures:** this is the equivalent of a personal signature that cannot be forged. They are based on public keys for authenticating the identity of the sender of a message or document. They also ensure that the original content of an electronic message or document is unchanged.

**Secure socket layer:** This is a protocol that utilizes standard certificates for authentication and data encryption to ensure privacy or confidentiality.

### **Securing E-Commerce networks**

Several technologies exist that ensure that an organization's network boundaries are secure from attacks such as;

**Firewalls:** they are barriers between a trusted network or PC and the untrustworthy internet. It's a single point between two or more networks where all traffic must pass (choke point); the device authenticates, controls and logs all traffic.

**Virtual private network (VPN):** A network that uses the public Internet to carry information but remains private by using encryption to scramble the communications, authentication to ensure that information has not been tampered with, and access control to verify the identity of anyone using the network.

**intrusion detection systems (IDSs):** A special category of software that can monitor activity across a network or on a host computer, watch for suspicious activity, and take automated action based on what it sees.

**Honeypot:** Production system (e.g., firewalls, routers, Web servers, database servers)

that looks like it does real work, but which acts as a decoy and is watched to study how network intrusions occur.



### **Chapter Review Questions**

17. Explain the reasons why E-crimes are difficult to stop.
18. What sorts of precautions should online shoppers use to secure their transactions?.
19. What are digital signatures and how can they be used to secure E-commerce transactions?
20. What E-crimes do you think are the most common in Kenya?

Turban E. D., Electronic Commerce, 2008 Managerial Perspective (Pearson International Edition) page 510-538.

## CHAPTER EIGHT

### ELECTRONIC PAYMENT SYSTEMS



#### Learning Objectives

By the end of this chapter the learner shall be able to;

- i. Explain the Payment Revolution
- ii. Explain the different payment cards that could be used to pay for the online transactions
- iii. Explain other forms of e-payment

#### 8.1 The Payment Revolution

According to Sapsford (2004), ZA currency can be anything that all members of a society agree it should be.” Prior to the tenth century BC, shells often were used in trade and barter. Metal coins appeared in Greece and India somewhere between the tenth and sixth centuries BC and dominated trade for 2,000 years. In the Middle Ages, Italian merchants introduced checks. In the United States, paper money was first issued in Massachusetts in 1690. In 1950, Diners Club introduced credit cards in the United States. Until recently cash was king, at least for in—store payments; checks were the dominant form of noncash payment. Today we are in the midst of a payment revolution, with cards and electronic payments taking the place of cash and checks. In 2003, the combined use of credit and debit cards for in—store payments for the first time exceeded the combined use of cash and checks (Gerdes et al. 2005). By 2005, debit and credit cards accounted for 55 percent of in-store payments, with cash and checks making up the rest. The growth in the use of plastic is attributable to the substantial growth in the use of debit cards and the decline in the use of cash. For example, from 1999 to 2005, debit card in—store payments went from 21 percent to 33 percent, while cash dropped from 39 percent to 33 percent (Dove Consulting 2006).

Similar trends are occurring in noncash payments of recurring bills. In 2001, 78 percent of all recurring bills were paid by paper-based methods (e.g., paper checks), while 22 percent of these payments were made electronically. By 2005, the percent of electronic payments of recurring bills had grown to 45 percent (Dove Consulting 2006). This change in the mix of payment methods is likely to continue.



A number of factors come into play in determining whether a particular method of e-payment achieves critical mass. Some of the crucial factors include the following (Evans and Schmalensee 2005).

**Independence.** Some forms of e—payment require specialized software or hardware to make the payment. Almost all forms of e—payment require the seller or merchant to install specialized software to receive and authorize a payment. Those e—payment methods that require the payer to install specialized components are less likely to succeed.

**Interoperability and Portability.** All forms of EC run on specialized systems that are interlinked with other enterprise systems and applications. An e—payment method must mesh with these existing systems and applications and be supported by standard computing platforms.

**Security.** How safe is the transfer? What are the consequences of the transfer's being compromised? Again, if the risk for the payer is higher than the risk for the payee, then the payer is not likely to accept the method.

**Anonymity.** Unlike credit cards and checks, if a buyer uses cash, there is no way to trace the cash back to the buyer. Some buyers want their identities and purchase patterns to remain anonymous.

**Divisibility.** Most sellers accept credit cards only for purchases within a minimum and maximum range. If the cost of the item is too small—only a few dollars—a credit card will not do. In addition, a credit card will not work if an item or set of items costs too much (e.g., an airline company purchasing a new airplane). Any method that can address the lower or higher end of the price continuum or that can span one of the extremes and the middle has a chance of being widely accepted.

**Ease of Use.** For B2C e—payments, credit cards are the standard due to their ease of use. For B2B payments, the question is whether the online e—payment methods can replace the existing off—line methods of procurement.

**Transaction Fees.** When a credit card is used for payment, the merchant pays a transaction fee of up to percent of the item's purchase price (above a minimum fixed fee). These fees make it prohibitive to support smaller purchases with credit cards, which leaves room for alternative forms of payment.

## 8.2 Using Payment Cards Online

Payment cards are electronic cards that contain information that can be used for payment purposes. They come in three forms:

**Credit cards.** A credit card provides the holder with credit to make purchases up to a limit fixed by the card issuer. Credit cards rarely have an annual fee. Instead, holders are charged high interest--the annual percentage rate--on their average daily unpaid balances. Visa, MasterCard, and EuroPay are the predominant credit cards.

**Charge cards.** The balance on a charge card is supposed to be paid in full upon receipt of the monthly statement. Technically, holders of a charge card receive a loan for 30 to 45 days equal to the balance of their statement. Such cards usually have annual fees. American Express's Green Card is the leading charge card, followed by the Diner's Club card.

**Debit cards.** With a debit card, the money for a purchased item comes directly out of the holder's checking account (called a demand-deposit account). The actual transfer of funds from the holder's account to the merchant's takes place within one to two days. MasterCard, Visa, and EuroPay are the predominant debit cards. .

### Processing Cards Online

The processing of card payments has two major phases: authorization and settlement.

Authorization determines whether a buyer's card is active and whether the customer has sufficient available credit line or funds. Settlement involves the transfer of money from the buyer's to the merchant's account. The way in which these phases actually are performed varies somewhat depending on the type of payment card. It also varies by the configuration of the system used by the merchant to process payments.

There are three basic configurations for processing online payments. The EC merchant may:

**Own the payment software.** A merchant can purchase a payment-processing module and integrate it with its other EC software. This module communicates with a payment gateway run by an acquiring bank or another third party.

**Use a point of sale system (POS) operated by an acquirer.** Merchants can redirect cardholders to a POS run by an acquirer. The POS handles the complete payment process and directs the

cardholder back to the merchant site once payment is complete. In this case, the merchant system only deals with order information. In this configuration, it is important to find an acquirer that handles multiple cards and payment instruments. If not, the merchant will need to connect with a multitude of acquirers.

**Use a POS operated by a payment service provider.** Merchants can rely on servers operated by third parties known as payment service providers (PSPs). In this case, the PSP connects with the appropriate acquirers. PSPs must be registered with the various card associations they support.

The key participants in processing card payments online include the following:

- Acquiring bank. Offers a special account called an Internet Merchant Account that enables card authorization and payment processing.
- Credit card association. The financial institution providing card services to banks (e.g., Visa and MasterCard).
- Customer. The individual possessing the card.
- Issuing bank. The financial institution that provides the customer with a card.
- Merchant. A company that sells products or services.
- Payment processing service. The service provides connectivity among merchants, customers, and financial networks that enables authorization and payments. Usually operated by companies such as CyberSource ([cybersource.com](http://cybersource.com)) and VeriSign ([verisign.com](http://verisign.com)).
- Processor. The data center that processes card transactions and settles funds to merchants.

Other payment methods

- Person to person payments are newest and fastest growing e-payment schemes. Able to transmit funds to anyone with an email address example is Paypal used in [ebay.com](http://ebay.com)
- Wireless payments such as “M-pesa” from safaricom or Zap from Airtel
- E-check: Electronic version of paper check
- E-charge: Charge purchases to local phone bill



### **Chapter Review Questions**

1. Describe the factors that are critical for an e-payment method to achieve critical mass.
2. What is an E-Check?
3. Explain why Mpesa has become a very common form of e-payment in Kenya?

Turban E. D., Electronic Commerce, 2008 Managerial Perspective (Pearson International Edition) page 547-580.

## CHAPTER NINE

### LEGAL, ETHICAL, AND REGULATORY ISSUES



#### Learning Objectives

By the end of this chapter the learner shall be able to;

- v. Explain the Payment Revolution
- vi. Explain the different payment cards that could be used to pay for the online transactions
- vii. Explain other forms of e-payment

#### 9.1 Introduction to Ethics and Privacy

Ethics characterize how individuals choose to interact with one another. In philosophy, ethics define what is good for the individual and society and the nature of duties that people owe themselves and one another. One duty is to not intrude on a person's privacy, which stems from the right to be left alone and free of unreasonable personal intrusions. Law that is, public law embodies ethical principals, but they are not the same. Acts that generally considered unethical may not be illegal. Lying to a friend may be unethical, but it is not illegal. Conversely the law is not simply the coding of ethical norms, nor are all ethical codes incorporated into public law.

A common agreement in a society as to what is right and wrong determines ethics, but they are not subject to legal sanctions except when they overlap with activities that also are illegal.

#### 9.2 Legal and Ethical Challenges and Guidelines

Business ethics defines how a company integrates the core values of honesty, trust, respect, and fairness into its policies and practices—and complies with legal standards and regulations. The scope of business ethics has expanded to encompass a company's actions with regard not only to how it treats employees and obeys laws but to the nature and quality of the relationships with shareholders, customers, business partners, suppliers, the community; environment, and future generations. European companies especially have embraced this expanded definition of ethics.

Under recent clarifications of the U.S. Federal Sentencing

Guidelines, companies with credible ethics programs, as opposed to merely paper programs such as that of Enron, may reduce penalties or avoid prosecution for crimes committed by managers or employees.

Because of the worldwide scope and universal accessibility of the Internet, there are serious questions as to which ethical rules and laws apply. These questions involve an appreciation of the law that is constantly changing. Lawsuits and criminal charges are very disruptive, expensive, and may damage customer relations. The best strategy is to avoid behaviors that expose the company to these types of risk.

Business people engaging in e-commerce need guidelines as to what behaviors are reasonable and what risks are foreseeable under a given set of circumstances.

### **EXHIBIT 17.7   Safeguards to Minimize Exposure to Risk of Criminal or Civil Charges**

1. Does the Web site clearly post shipment policies and guarantees? Can the company fulfill those policies and guarantees? Does the Web site explain what happens in case of a missed deadline? Does it comply with Federal Trade Commission (FTC) rules?
2. Does the Web site clearly articulate procedures for customers to follow when returning gifts or seeking a refund for services not received?
3. Has the company checked backgrounds before entering agreements with third-party vendors and supply chain partners? Do those agreements with vendors and partners indemnify (i.e., protect) the company against their failure to deliver goods or process transactions on time and correctly?
4. If a third-party ISP or Web-hosting service is used, are there safeguards if the site crashes, is infected by malware, or if bandwidth is insufficient to meet all of your customers' needs?
5. Is there sufficient customer support staff, and are they knowledgeable and adequately trained to process inquiries from customers?



### **Chapter Review Questions**

1. Define the term ethics
2. Explain how a company can minimize and safeguard exposure to risk on criminal or civil charges.

771-800.

## **SAMPLE EXAM QUESTIONS**